PHILOSOPHY

THE JOURNAL OF THE BRITISH INSTITUTE OF PHILOSOPHY

VOL. IX No. 36. OCTOBER 1934

CORRESPONDENCE

THE PRESENT NEED OF A PHILOSOPHY

MY DEAR EDITOR,

I hope things are not so bad as Sir Herbert Samuel seems to think. Humanity would be in a truly desperate plight if it had to say, "Stop thinking about everything except what is urgent." I cannot believe that our fate is as cruel as this.

It may very well be true that far too small a proportion of eminent contemporary philosophers write about the causes of our present social discontents, or about likely remedies for them. If so, and if these particular philosophers are incorrigible, it is pleasant to know that there is a promising field for others.

I confess I am not greatly impressed by the difficulty of explaining to earnest young men and women what "epistemology" would be at, although I admit the possibility that epistemologists may have talked themselves dry.

By "epistemology," however, Sir Herbert Samuel appears to mean the analysis of "conceptions," and I am unable to decide whether his argument is that there are no such entities as conceptions, or that, although there are conceptions, "good," "evil," "value," and "colour" are not conceptions but shams. In either case he appears to be professing to offer either a truer conception or a better analysis than the wicked philosophers who do not write about urgent sociological matters.

In general I should say that I hope there is a permanent need for philosophy, and that there will continue to be many philosophies, not one only.

Yours faithfully,
JOHN LAIRD.

ABERDEEN UNIVERSITY,
July 2, 1934.

My Dear Editor,

I am very interested in the letters which have appeared in Philosophy about the present need of a philosophy. To my mind philosophy as conceived by the layman is too abstract to be intelligible, and too remote from the affairs of everyday life to be practical. Mr. Aldrich stated that too few men of affairs care about becoming philosophers. This is true only in the sense that they do not read the current works on philosophy, and the reason for that is that the current works are usually couched in a philosophical jargon which is unintelligible to those who have not had time to familiarize themselves with the philosophical classics. Yet all men of affairs are really philosophers, for without a philosophy of life one could not be a successful man of affairs. They may not consciously have formulated a philosophy, but inasmuch as they live according to certain ideals, they are practical philosophers.

I take it that philosophy aims at obtaining a coherent view of reality as a whole, in so far as that is possible with our limited knowledge, and further, that by knowing more about reality, we may understand better how to live. For surely the important thing in this life is rather to live it than to speculate metaphysically. (Of course metaphysical speculation is necessary in order to arrive at an idea of our purpose in life.)

I agree, too, with Lord Listowel's statement that the only life really worth living is a life resplendent with scientific truth, with religious vision, with moral and artistic beauty, and that reason and love must ultimately prevail wherever humans dwell. The aim of life, then, should be to turn our creative energy, the harnessing of which is the most satisfying thing in human experience, into true and beautiful channels.

R. G. Collingwood in *Speculum Mentis* states, "All thought exists for the sake of action," and I think that this should be the test of a true philosophy. What is the good of thoughts that cannot be acted upon, or of a philosophy which is thought out but not practised? This question must often occur to the layman who tries to read many modern philosophical works.

If I am right in thinking this, then it appears to follow that the world is in need of a philosophy thought out by our great men, and capable of being acted upon; moreover, presented to the lay-reader in simple language, so as to promote thought in him about life, and to help him in living it.

Yours sincerely,

Harold H. Coombes.

Boxgrove School,
Guildford, Surrey.
August 4, 1934.

SELF-EVIDENCE AND MATTER OF FACT[1]

PROFESSOR G. F. STOUT

PART I

THE distinction tentatively drawn by Mr. Porteous at the last meeting of the Society between logical and causal necessity depends on the more general distinction between what is known or capable of being known as self-evident and what is known only as matter of fact. That there are three cows in a field is a matter of fact. That $1 + 2 = 3$ is self-evident and necessarily true (if it is true at all). So soon as the question is raised it is seen that there can be no alternative to its being true—otherwise it is not self-evident. But there is no necessity that a field should have cows in it, or that if it has they should be just three in number. Similarly, it does not seem self-evident that an unsupported stone must fall to the ground. Those therefore who hold that the fall of the stone is necessitated by causal conditions must, it would seem, be speaking of a different kind of necessity, that which Mr. Porteous calls causal. But what kind of necessity can this be? If it is not evident to us, what kind of right can we have to assert it? And yet can we possibly do without it?

A full discussion of this question must start from both ends. It must examine the nature and conditions of self-evidence and also the nature of causal relations and our knowledge of causal relations. What I shall be principally concerned with in the present paper is the nature of self-evidence in its distinction from matter of fact.

It is not open to doubt that matter-of-factness is different from self-evidence and that neither is ultimately reducible to the other. But it is another question whether either is ultimately separable from the other. My own position is that they are ultimately inseparable. There is no self-evidence which does not presuppose matter of fact; there is no matter of fact which does not self-evidently stand in relation to other matter of fact. It is the second of these propositions which will *prima facie* arouse most opposition. But as a necessary preliminary to dealing with it I must treat of the first.

Various accounts have been given of the nature of self-evidence. The simplest is that a proposition is self-evident when, in order to see that it is true, we have only to understand with sufficient fullness

[1] A paper read to the Scots Philosophical Club, May 26, 1934.

and precision what is asserted in it, so that error can only arise where there is some confusion about what is meant. This will be accepted by everybody as a provisional definition. It is also very generally held that in order to apprehend self-evidence we need only consider what we mean, and that the question whether what we mean really exists is irrelevant. "Propositions of this kind," says Hume, "are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe. Though there never were a clircle or triangle in nature, the truths demonstrated by Euclid would for ever retain their certainty and evidence." Statements of this kind inevitably raise the question: What do we mean if we do not mean anything that really exists? One answer is that what is meant has being only for thought, that it is an "idea" in the Cartesian sense. I shall not spend time in discussing this view. When I say that a three-sided figure must have three angles, I certainly do not mean this assertion to refer to "ideas" in my head. Another answer is that self-evidence is concerned with universals taken as characters in abstraction from anything which they may characterize. But so far as a character characterizes nothing, it is not a character. On the same ground which warrants us in saying that there cannot be a square circle, we are equally justified in saying that there cannot be the *character* of being a square circle. Another answer with which I am more in sympathy is that of Leibniz. According to him the field of self-evident truth is the field of possibilities as distinct from real existence. Perfect circles and perfect straight lines need not really exist in nature; but they must be geometrically possible, if it is evidently true that a perfectly straight line can touch a perfect circle, without intersecting it, in only one point. So far I can follow Leibniz; but I differ from him profoundly in the status which he assigns to possible being. According to him, possible being is an independent precondition of real existence. Consequently self-evidence is independent of and prior to matter of fact. This is clearly seen in his doctrine of the infinity of possible worlds among which the Creator selects one to be realized to the exclusion of the others. It is true that Leibniz here presupposes one real being—the Creator. But in the only sense which is here relevant the possibilities contemplated by the Creator are independent of Him. He does not determine what is possible and what is impossible. He can only select between possibilities. Leibniz does indeed hold that possibilities have being only as objects of the divine understanding. None the less, God does not create possibilities: He merely knows them; and in this sense they are independent of Him. Hence the realm of evident truth—or as Leibniz would say, eternal truth—is separate from and independent of matter of fact, and imposes conditions to which

matter of fact must conform. This leaves the status of possibilities utterly mysterious and unintelligible.

The view which I myself hold is as follows: Possible being is always relative and presupposes the real existence of particulars[1]; and the link between them is always the universal; the fact that real particulars are always members of sorts or kinds. The universal is a determinable with diverse determinates, a variable with diverse values. Now considered merely as values of a variable, as determinates of a determinable, the instances of a class or kind need not really exist: they may be only possible. On the other hand, apart from real existence, there are no universals, no classes or kinds. If there were no real shapes there would be no shape in general. But given actual instances of shape apprehended as such, it becomes evident that other shapes which may be very different in their specific character are at least possible, whether they really exist or not. If there were no actual shapes there would be no possibility of a perfect circle. But given the general kind of character which we call shape as exemplified in actual instances, we can see that there is an endless variety of possible shapes, and among these the perfect circle. That is to say, the kind of figure which we call a perfect circle is possible relatively to the universal Shape in general. It is possible as a perfectly determinate figure, as determinate as any actual figure presented in experience. This is what I mean by calling it a geometrical possibility. In this sense a round square is not a geometrical possibility.

Leibniz by no means stands alone in making the field of self-evident truth separate from and independent of matter of fact. The friends of forms in Plato's *Sophist* held a similar position, and it is expressly maintained by some writers of the Phenomenological school, such as Nicolai Hartmann in his *Ethics*.[2] More interesting to us is the position held by Bertrand Russell in the *Problems of Philosophy*. There universals are treated as in their own nature quite separate and independent of the particulars given in experience. They are related in a peculiar way to particulars, but this relation is not essential to them, and all self-evidence is for Russell the perception of the relations of universals as such.

It is very commonly assumed not only that self-evidence is independent of real existence but that it always yields certainty. This may mean either that judgments asserting probability cannot

[1] I also hold that real being is essentially incomplete and presupposes possible being. Both are equally essential to the universe of being.

[2] I am not prepared to charge Husserl himself with this, at least in the present stage of his development. Cf. *Formale u. transzendentale Logik*, p. 150. "*Realität hat einen Seinsvorzug vor jeweder Irrealität* (Idea, Essenz u.s.w), sofern alle Irrealitäten wesensmässig auf wirkliche oder mögliche Realität zurückbezogen sind."

be self-evident; or that a proposition accepted on the ground of its self-evidence cannot be false. Both these assumptions are untenable. First, what is only probable is not certain; therefore it cannot be self-evident that it is certain. But it does not follow that its probability cannot be self-evidently certain. The mathematical theory of probability rests on self-evidence. If there are 99 black balls in a bag and only one white one, then it is self-evident and certain that in a random drawing a black ball is more likely to be drawn than the white one. This is perfectly compatible with the fact that it is not certain that a black ball will be drawn. Though what is probable is *not* self-evident, its probability *is* self-evident. So far there is no difficulty. But what are we to say of inductive as distinct from mathematical probabilities? The child who has touched a flame and been burnt refrains from touching the same flame again shortly after. Is its conduct based on any sort of evidence? or only on a purely blind impulse? With the second alternative, which is that presented by Hume, I do not here concern myself. Assuming as it is generally assumed that the child has some sort of evidence to justify his conduct, what kind of evidence can this be if it is not self-evidence? It certainly does not depend merely on matter of fact as given in experience. Probabilities cannot be matters of fact. Granting that the child knows that as a matter of fact he has been burned on touching this particular flame, the likelihood that he will be burned on touching it again is not known as a matter of fact. It may be said that it is an inference from matter of fact. But there can be no inference (as distinguished from a blind impulse to believe) where there is no evident connection between premise and conclusion. It seems to follow that the child's behaviour is either based on self-evidence or on no evidence at all. I cannot here go thoroughly into the question, which belongs properly to the treatment of causation in its relation to problematic induction. But I may state my own position briefly and somewhat dogmatically. The child when it experiences the sequence of being burnt on putting its hand in the flame does not apprehend this event as merely particular matter of fact, but as a particular instance of a kind of sequence which is in general likely to occur or tends to occur. Unless the given matter of fact is apprehended, however vaguely, as an instance of some general rule of probability there can be no transition on evidence to other cases. Hence it would seem to follow that all evidence for matter of fact which goes beyond "the testimony of the sense, and memory" must be self-evidence (if it is evidence at all). None the less, inductive probability presents complications of its own which require separate treatment. When I speak of self-evidence in the present paper I do not mean to include it.

What is self-evident need not be obvious; and what seems self-

evident need not be true. It need not be obvious, because in order to be able to perceive it we must sufficiently understand the proposition with which we are dealing; and this may require long previous preparation. What seems self-evident need not be true, because we are liable to errors of inadvertence and confusion, through which we fail to distinguish between what really is self-evident and something else which is not so. It seems self-evident to the untutored mind that if the earth were round men at the Antipodes would fall off into space. Here the apparent evidence rests on an assumption which is not recognized as such, but unwittingly taken for granted. What is unwittingly taken for granted is the direction in which bodies fall on this side of the earth. It is taken for granted that they fall in the direction defined by a line drawn from the head to the feet of a man standing upright in such a way that if not stopped by obstacles they would continue to fall in this line, so that, if there were a clear passage for them to the other side of the earth, they would continue indefinitely to fall away from the feet of a man standing upright on this side. On this assumption it really is self-evident that men at the Antipodes would fall off into space. But the assumption itself is not self-evident, and the question whether it is so or not has not been fully faced. If it had been, it would have been recognized as an alternative possibility that the direction of the forces of gravity may be towards the centre of the earth. We may express this by saying that the fallacy is due to a confused and indistinct idea leading to a failure to distinguish between what really is self-evident and what is not so.

Such instances of error as that given by Plato in which a man reckoning up a column of figures says $7 + 5 = 11$, instead of $7 + 5 = 12$, come under a different head. The appeal here is not directly to primary self-evidence, but to a derivative substitute for it which may or may not be adequate. I shall have more to say about this in dealing with verbal and symbolic formulas.

I have yet to say something about the part played by the subjective and objective factors in self-evidence. Here I shall be brief and dogmatic. Setting aside representative theories of knowledge such as the Cartesian, we may say that all evidence—whether self-evidence or matter of fact—is objective. It simply is the object itself exhibiting its own nature to the thinking mind. That red is a different colour from green is evident from the nature of red and green and is not in any way due to the mind which compares them. The Greek phrase *αὐτὸ δηλοῖ*—"itself shows"—is the appropriate formula for all evidence whether self-evidence or matter of fact. On the other hand, it is equally true that in order to constitute evidence, the nature of the object must be presented—or at least regarded as capable of being presented—to some mind. The mind

does not determine what is evident and what is not evident: this depends on the objective ground of evidence. But unless the objective ground is apprehended or apprehensible by a mind, there is no actual or potential evidence. The same holds for truth: there is no truth or falsehood apart from a mind which asserts or denies. But *what* is true and *what* is false is quite independent of assertion and denial. Now the objective ground of self-evidence evidently extends beyond what is or even can be present to finite minds. The relations of shape, size, distance, and direction between bodies as they exist in nature have logical properties which would make them capable of mathematical treatment if we knew them with sufficient completeness and precision. But such knowledge in its intricacy and boundless complexity is hopelessly beyond our reach. All that we can say is that from the general nature of spatial relations it is evident, though only indeterminately evident, that the geometrical knowledge of an omniscient being would comprehend all this detailed complexity. What I mean by indeterminately evident may be illustrated by an example. I know that a long column of figures must have a sum, and a definite sum; but unless I have added it up I do not know what this sum is. What is self-evident in this case is indeterminate, and for convenience I use the phrase "indeterminately self-evident."

This has a bearing on the nature of causal necessity. The question whether this necessity is of a different kind from that on which self-evidence depends is by no means decided by pointing out that we can never completely see how any given effect self-evidently follows from any given cause. We may never be able to know perfectly the nature of the effect and the nature of the cause so as to have complete insight into their connection. Yet it may be indeterminately evident for each particular event that it has a cause, and also that the relation between the event and its cause is such that with adequate knowledge of both it would be self-evident that the effect can only have this cause and this cause only this effect.

I am not here prejudging the question about causal necessity in its relation to self-evidence. I am only pointing out what the question is. If I am right it is not decided, and cannot be decided, by such arguments as those used by Hume.

There are some important questions which I have yet to consider, such as the nature of evidence in symbolic logic and pure mathematics and the general question whether self-evident propositions are synthetic or analytic. But before proceeding to these topics I must first consider more exactly how the apprehension of self-evidence takes place and on what conditions it depends. I shall do this by analysing a special example which is given by Johnson to illustrate what he calls "intuitive induction."

Part II

To quote Johnson:—

"In judging upon a single instance of the impressions red, orange, and yellow, that the qualitative difference between red and yellow is greater than that between red and orange (where abstraction from shape and size is already presupposed) this single instantial judgment is already implicitly universal; in that what holds of the relation amongst red, orange, and yellow for this single case, is seen to hold for all possible presentations of red, orange, and yellow."

I agree with Johnson in the importance which he attaches to this process of "intuitive induction," as he calls it; but I am not altogether satisfied by his account of its nature. What does he mean by "implicitly," when he says that the "single instantial judgment is already IMPLICITLY universal"?

He says that generalizations of this sort "involve an intermediate step by which we pass from one instance to others of the same form and in this passage realize that what is true of the one instance will be true of all instances of that form."

It is, I take it, on account of this intermediate step that he regards the instantial judgment as only implicitly universal. But it seems to me that there is no such intermediate step. If in comparing the particular instances of red, orange, and yellow we apprehend each of them as being instances of the general sorts of colour that we call red, orange, and yellow, then in apprehending the orange as intermediate in quality between red and yellow, we directly apprehend orange in general as resembling in quality red in general and yellow in general; the further step of which Mr. Johnson speaks is not required. On the other hand, if we apprehend particular instances of red, orange, and yellow without recognizing them as being particular instances of these kinds of colour the further step is impossible. What is required is not a further step but a previous step, by which we come to form the general ideas of red, yellow, and orange. In becoming aware of the self-evidence of the general principle there is no transition from the given instance to other instances. It is only in bringing a given particular case under the general rule that there is a transition. There is here an inference, but it is deductive rather than inductive.

It would seem that the reason why Mr. Johnson regards the process as a kind of induction is that—as he thinks—it involves this intermediate step from the given particular instances to other particular instances. If this is what is meant, the use of the term "induction" seems to me to be here quite misleading. None the less, I do not reject it. I accept it for a reason which is the very contrary of Mr. Johnson's. I accept it because, as I have already indicated,

even problematic induction seems to me to be ultimately based on judgments essentially akin to those which Mr. Johnson refers to as "intuitive induction."

I pass next to the part played by possibility in intuitive induction. Mr. Johnson says that "the relation amongst red, orange, and yellow is seen to hold for all possible presentations of red, orange, and yellow"; but he has not analysed what is implied in this use of the term "possible." The general proposition is seen to hold not only for all actually perceived, or even for all actually existing orange colours, but for all POSSIBLE instances of this sort of colour. It thus covers instances which may never have actually existed in the past and may never exist in the future. What is then meant by calling them "possible"? Certainly not merely that we do not know whether they ever have existed or ever will exist, for this does not answer the question WHAT IT IS about which we are thus ignorant. It does not account for the fact that these possible instances are positively seen to be possible, so that we have a right to deny that they are impossible. This last statement gives us a clue to the nature of the possibility. The possible instances of orange which may never be actual are possible only in a special way; they are possible only as being instances of the general nature of orange. If they do not actually exist, this is due to other conditions, and not to the general nature of orange colour. So far as the general nature of this sort of colour is concerned, they are capable of actually existing as *completely determinate* instances of it. They are therefore determinate colour possibilities. This we can positively SEE; it does not in any way depend upon our ignorance. There may be other conditions, physical, physiological, general, or particular, which bar the realization of such possibilities, making them, for instance, physically or physiologically impossible; none the less, they remain positive and determinate colour possibilities.

It is most important to notice that even the instances from which intuitive induction directly starts need not, as Johnson seems to think, be actually perceived or actually exist. Some of them or all of them may be merely possible. In our present example, though actual instances of orange seem indispensable, it is not necessary that there should be actual instances of pure red or pure yellow. From the general nature of such a graduated series it follows that there may be instances of orange more red or more yellow than any actually perceived, and in the limit pure red and pure yellow. In geometry, which deals with perfect figures, all of the instances directly relevant may be only possible. It is no doubt true that if there were no actual lines approximating to straightness in various degrees, perfect straightness would not be possible or conceivable. But in being aware of lines as varying in this way, we

are aware of the limiting case of perfect straightness. Starting from an instance of a line which is at any rate not known to be perfectly straight, we have only to say, "*if* this line were perfectly straight," in order to have the thought of a particular possible instance of perfect straightness. This applies to the example which Mr. Johnson gives of what he calls "summary induction": "Two straight lines terminating at the same point cannot intersect at any other point." Here, no doubt, we perceive or image two lines which are at least approximately straight, but it is not with these lines that we are dealing. We deal only with supposed lines. The question we ask is: "If these lines were perfectly straight, then what follows?" It is therefore with a particular geometrical possibility that the so-called "summary induction" is concerned. This being so, there is in principle no essential difference between Johnson's "summary induction" and his "intuitive induction." He himself seems to proceed on the assumption that summary induction is concerned with actually perceived or imagined lines; hence his account of it is, as Mr. Mace points out,[1] entirely untenable. We may say that what is intuitively evident in Johnson's example is that the mere lengthening of the lines beyond the point of their intersection, provided they are perfectly straight, can never be followed by their convergence, but only by their greater divergence. It may be said that this is true only in Euclidean space. I answer that Euclidean space is at least a geometrical possibility, though it may not be the only one.

I pass now to the question whether self-evident propositions are analytic or synthetic. The answer depends on what we are going to mean by "analytic" and "synthetic." If "analytic" is taken to mean "tautologous," they are certainly not analytic; and if "synthetic" means "conveying information," they are certainly synthetic. Yet there is a sense—and the only useful sense—in which they are analytic. Turning to our example, it may be said that the proposition, "any orange resembles both red and yellow," is a tautology, because it is true by definition. How are we to define orange except as the colour quality intermediate between red and yellow? But the argument proves too much, for no one, I presume, would admit that a proposition which depends, as this does, on the experience of particular colours can be a tautology. The proposition would not be self-evident to a cortically blind person. There must be a fallacy somewhere, and it is not difficult to see where it lies. What is true by definition is not therefore tautologous, unless definition itself is tautologous. But this is not and cannot be so. To define is to define something, and this cannot in the first instance be a word or symbol. To define a word or symbol is to state what it is intended to stand for. What is primarily defined is what it is intended to stand for.

[1] *Principles of Logic*, p. 247.

It is only in a secondary or derivative sense that the word or symbol itself is defined. Definition, then, is of some object of thought which we mean to refer to and which we may or may not represent by a word or symbol. Definition assigns characters such that whatever possesses them is THEREFORE what we mean to refer to; but the definition does not make or in any way constitute the *being* of what is defined. You must first catch your hare before you can cook it. What is to be defined must first be found or discovered. To be true by definition, then, is to be true by the nature of what is defined, but no tautologous procedure can ever find what this is. In this respect "true by definition" and "true by observation" are on the same level. A botanist carefully observes and writes down the description of a plant; afterwards, relying on this description, he asserts that the flower has compound leaves. But that is already in the description, it conveys no new information. Are we then to say that his proposition is tautologous? Only if we say that the description itself is tautologous—which it plainly is not. It may be said that definitions are arbitrary, but what does this mean? So far as I can see, it means only that we are free to SELECT WHAT we are to define, and that this depends on our interest; but SELECTING is quite different from MAKING. If I select a cigar from a box I do not make the cigar. So those who invented the game of chess selected among an endless variety of possible moves certain moves for the chess pieces, and proceeded to define these moves. But the possibilities which they selected were not made possible by their selecting them; they were made possible by the general nature of spatial conditions and the special constitution of a chess board.

A proposition is analytic without being tautologous when the data required for answering a question are all included in the question itself. Thus the question concerning the qualitative relations of red, yellow, and orange can be answered merely by examining the nature of these colours without introducing any further datum which is not thus supplied. On the other hand, the question whether all bodies gravitate cannot—or at least could not before Einstein—be decided merely by considering what we mean by the law of gravitation and what we mean by body as something extended and movable in space. Further data are required, and the ultimate appeal is to problematic induction. But if we start by assuming properties of space-time from which gravitation follows as a necessary consequence, the proposition that bodies gravitate is so far analytic, though the proposition that space-time has these properties is not so, depending ultimately on problematic induction.

Propositions which are in this sense analytic are not therefore tautologous. They are not so because the analysis consists in distinguishing different parts of a whole in their relation to each other.

(By a whole I mean whatever "includes," and by a part whatever "is included.") In our example, it is plain that no scrutiny of orange by itself, or of red or yellow by itself, would enable us to see that orange resembles both red and yellow. The terms must be brought together and compared. But what is involved in this? Is it the mental operation of comparing which brings together the otherwise separate items? This cannot be so, because in order to compare, the items compared must initially be apprehended as related to each other. Further, if the "synthesis" depended on the mental process, then the resulting relations themselves would also depend on the mental process. We should thus be reduced to the position of Locke, that relations are the work of the mind. This would mean that the mind makes the resemblance of orange to red by comparing them. I can see no alternative, except to assume that in intuitive induction we are dealing with a whole which the mind itself does not constitute, and that we are analysing this whole into its constituent parts and relations.

But what is the nature of the whole in the example taken from colours? No doubt we apprehend the colours compared—possible or actual—as related in space or time; but this is obviously not sufficient. What seems essentially necessary is that the instances compared should be apprehended as instances of colour. This makes it possible to distinguish more special kinds of colour; for instance, orange and red and yellow; then we may compare instances of orange as such with instances of red and yellow. The distinctively relevant type of unity in our example is, then, unity of class or kind, including instances or specific sub-classes as its parts.

Part III

I have left myself time for only a brief reference to the special provinces of logic and mathematics. I must content myself by indicating the general way in which I should approach these topics. Self-evidence ultimately depends on intuitive induction, and therefore on actual instances given in experience or possible instances arising out of the general nature of what is thus presented. Logic and mathematics deal directly only with possibilities. Further, the self-evident propositions with which they are concerned are not only self-evident, but *a priori* in the distinctive sense which Kant has given to that ambiguous term. They enter essentially into the general structure of our knowledge. In this sense special propositions about colour as such are not *a priori*; but such propositions as: "$1 + 2 = 3$" or "what is contained in a part is contained in the whole," are *a priori*. They are concerned not merely with general ideas, but what Descartes and Spinoza would call "common notions." It is

possible to assert that a proposition is *a priori* and yet to deny that it is self-evident. Hume, for instance, not only admits, but insists that the principle of causality is *a priori*. Without it the individual would be confined to his own momentary impressions and images and the remembrance of his past impressions and images; there would be nothing that could properly be called knowledge of a world. Hume's whole difficulty was, that though the causal relation was in this sense always *a priori*, it was not self-evident—a difficulty which Kant does not seem to meet satisfactorily.

Another characteristic of logic and mathematics is their systematic employment of symbols, which seems remote from the self-evidence of intuitive induction. This withdrawal from intuitive induction is not, however, peculiar to technical symbolism; it is found also in the use of ordinary language. When I say that part of a part is part of a whole, or that orange is like both red and yellow, I need not have before my mind any particular instances actual or possible; and yet I seem to see that the propositions are evidently true. But if we examine the nature of such evidence it turns out to be secondary and derivative; it is the result of previous experiences in which we have apprehended the evidence at first hand through intuitive induction. Both Descartes and Locke were quite aware of this, and Locke was led by it to the distinction between "habitual" and "actual" knowledge, and also to his emphatic denial that "general maxims" —as he called them—are the principles first known on which all our other evident knowledge depends. Some such distinction as Locke's between habitual and actual knowledge is certainly needed where particular instances required for intuitive induction are not present. Primary self-evidence is not present, but only a derivative and secondary substitute for it. The point is, that in case of obscurity, doubts or difficulty, the ultimate appeal is always to primary evidence. As Berkeley said, "we must get behind words and consider the things themselves." Habitual knowledge bears a relation to primary self-evidence analogous to that of credit to cash. Credit works well enough so long as it is not seriously called in question, but when it is, the alternative is either cash or bankruptcy. Symbols seem even more remote from primary self-evidence than ordinary language, for even habitual knowledge may be here to a large extent dispensed with. We may manipulate the symbols according to certain rules of operation with little or no reference to their meaning. Such procedure can only be justified if the meaning of the symbols and of the rules of operation is to begin with adequately based on primary self-evidence. But here again, in cases of doubt or difficulty it is always legitimate to raise the question whether this essential condition has been adequately fulfilled.

I must in conclusion say something about the connection of

symbolic logic with pure and applied mathematics. I speak with fear and trembling, as I am not an expert in either of these subjects. I am, however, encouraged by the fact that my view coincides in substance with that of Johnson, who was an expert in both. Symbolic logic may for our purpose be regarded as distinctively concerned with the logical properties of relations, on which inference depends. Very different kinds of relations relating different terms may have the same logical properties. Inclusion, equality, resemblance, temporal priority and subsequence, are all transitive relations. If x is related in any of these ways to y and y to z, then x is related in this way to z. If $x\,r\,y$ and $y\,r\,z$ then $x\,r\,z$. This formula supplies a definition of transitive relation. What evidence is there that certain kinds of relations do possess these logical properties? How in the first instance can we know of such logical properties at all? Only by intuitive induction depending upon particular instances actual or possible. But when the work of intuitive induction is done, we may consider logical properties in abstraction from particular instances and from the diverse kinds of relation which exhibit these properties. This leads to the system of symbols which is called symbolic logic. Now, according to Bertrand Russell, pure mathematics is just a complex development of symbolic logic. Is this position really tenable? The germ of Russell's view is to be found in Descartes, and it will be convenient to proceed by starting from the Cartesian position. Descartes begins by raising the question: What have the several branches of mathematics, geometry, arithmetic, astronomy, mechanics in common, which entitles them all to be called mathematics in spite of the diversity of their subject-matter? He insists at the same time that what they have in common must account for the evidence and certainty of mathematical reasoning in which they all agree. The answer which he gives to his question is that mathematics, whatever may be the special subject-matter with which it deals, is always concerned with certain relations or proportions.

Though Descartes does not himself use the phrase, it is plain that he considers these relations or proportions only so far as they had certain general logical properties. He thus developed a universal mathematics which may properly be regarded as also belonging to symbolic logic. From this universal mathematics he had next to pass back again to special branches. He selected geometry for special treatment, and in particular the geometry of conic sections. In dealing with this special subject-matter he needed premises which his universal mathematics did not of itself supply; for example, the fundamental premise that the position of every point in a plane could be determined by its perpendicular distance from two straight lines intersecting at right angles within the same plane. The crucial question is, on what sort of evidence do such propositions as this

depend? The natural answer is that we know they are self-evident through intuitive induction, in which we consider only the general nature of spatial relations. In Cartesian language, such propositions are evident from the *clear and distinct idea* of extension and its possible modes. If we provisionally accept this view as correct, it follows that the geometry which deals with spatial relations is not merely a complex development of symbolic logic, but requires principles of its own which in contrast to physical facts and theories are proper to mathematics. It is true that these special principles assert relations having logical properties; hence it follows that geometry has always a counterpart in a symbolic system, which, so to speak, is its logical skeleton; but this logical skeleton is not itself geometry, unless we are to say—as I once heard Bertrand Russell say—that geometry has nothing to do with space. The case is essentially different with mathematical physics or mechanics. Here intuitive induction no longer suffices, we must have recourse in the long run to problematic induction based on empirical data. If we regard behaviour in accordance with the law of gravitation merely as one possible way among others in which bodies may or might behave, we are still within the region of pure mathematics as distinct from physics; but if we ask the question, whether and how far the law of gravitation is a law of nature in accordance with which actual bodies actually behave, however important a part mathematics may play in solving the problem, mathematics by itself does not suffice. The results which it yields have to be constantly tested by their agreement or disagreement with empirical data which are not intuitively self-evident.

This account of the matter, it will be said, is woefully behind the time. In particular my sharp distinction between physics and mathematics is quite out of date. What right have I to assume that such principles as that on which the Cartesian geometry is founded are self-evident, when the accepted doctrine now is that all—or at least many of them—are due to problematic induction?

In and through intuitive induction it seems to me self-evident that two straight lines intersecting at a point cannot intersect at any other. Is there any satisfactory way of showing that I am mistaken? It certainly is not enough to say that in appealing to this sort of evidence I may be committing some fallacy of confusion or inadvertence. Human beings are always in principle fallible, whatever may be the nature of the evidence on which they rely. The only really satisfactory procedure would be to point out some geometrically possible alternative, such that keeping it in view, what appeared to be self-evident before no longer appears self-evident. It may seem self-evident to the untutored mind that two lines continually approaching each other must eventually meet; but

the apparent self-evidence ceases when the special conditions are pointed out under which asymptotic lines are possible. Now no one has even attempted in this way to meet the difficulty about intersecting straight lines. There is, however, another course open to those who challenge the authority of intuitive induction. On the ground of other evidence, based ultimately on empirical data, they may deny that the seemingly self-evident proposition is true, and infer that THEREFORE it cannot really be self-evident. This leads to a very unsatisfactory position, as it involves an ultimate logical antinomy. It is really arbitrary to decide dogmatically which of the two sorts of evidence is to be preferred to the other. All attempts to account for the seeming self-evidence by suggesting that we are now under the influence of hardened prejudices due to precipitate interpretation of empirical data in the primitive experience of the individual or his ancestors, really beg the question.

It will be objected that I have been throughout assuming Euclidean space. What account am I to give of non-Euclidean spaces; in other words, what is the status of metageometry? Here there seem to me to be three distinct alternatives which are apt to be confused with one another. First, we may mean by the various kinds of space various alternative developments of symbolic logic. Starting from Euclidean space, we may find a logical counterpart for it in a complex symbolic system, which in itself has no special reference to spatial relations. We may then discover that there are other such symbolic systems possible and self-consistent, which substitute for the logical counterpart of the axiom of parallels some other symbolic formula. But it does not in the least follow that such systems correspond to any possible system of spatial relations. If they are called geometries, they are geometries which have nothing to do with space, or as Descartes would have said, with the possible modes of extension. This view would remove all difficulties, but it by no means satisfies the claims of metageometry. The second alternative I have already virtually dealt with. It is that in intuitive induction itself we either find it evident that there are alternatives to the axiom of parallels or at any rate do not find it evident that there cannot be. But intuitive induction seems positively to reveal the impossibility of this alternative. When we consider only the general nature of spatial relations, we find it positively and objectively inconceivable that, for example, precisely similar triangles different in size may be geometrically impossible. The third alternative is the one which I find myself driven to accept.[1] It is that what is called the distinction between different kinds of space is not properly a geometrical, but a physical distinction. It is not grounded in the general nature of spatial relations, but in different possible assump-

[1] If I rely on my own judgment and not on the authority of experts.

tions which we may make concerning the ultimate constitution and laws of the physical world. Though it is geometrically impossible for two intersecting straight lines, however far they are produced, so long as they remain perfectly straight, to intersect again, yet ultimate physical conditions may be such that they cannot remain perfectly straight, but, on the contrary, diverge from straightness in a regular way, so that in the end they must meet.

I can find only one way of making this vague suggestion more definite. I have to fall back on the now unfashionable, but not exploded, conception of aether, what Sir Oliver Lodge calls the "aether of space," as an omnipresent medium within which all other forms of material existence are processes or states. On this assumption what are called different spaces are really different hypotheses concerning the general constitution of the aether as determining what can and what cannot take place within it. The possible alternatives on this view will not, properly speaking, be geometrical but physical. Intuitive induction cannot decide between such alternatives. The decision can only be reached by interpreting the empirical data of observation and experiment. If the results reached in this way seem to the unscientific mind strange and hard to believe, this may well be due to hardened prejudice arising from a precipitate interpretation of empirical data in primitive experience before critical reflection began. I suggest with all diffidence that this may be what metageometry means so far as it is not merely a development of symbolic logic. On this view, if this view be tenable, its validity is secured and its claim to utility and importance is satisfied. All that it would have to surrender would be its title to be called "geometry," and this would be fully compensated by its title to be called fundamental and universal "physics." If the view I suggest is untenable, I should like to know precisely wherein the fallacy which misleads me consists.

THE PLACE OF TRADITION IN THE MORAL LIFE

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THE term tradition is frequently used in the narrow sense of oral transmission from one generation to another; occasionally in the wider sense of transmission of any kind, written or oral or forms of behaviour, derived from a preceding generation. Sometimes it includes custom; sometimes it does not. At times it refers to the process of transmitting; at other times to the result transmitted.

We shall use the word here in the widest possible signification to cover that procedure peculiar to human life by which the findings of one generation of a given society are consciously passed on to the succeeding generation, and are received by the latter, not as derived from their own experience in the present, but as recognized or recognizable authoritative communications from the past. In this sense the term will embrace all that is commonly meant by the customs of a society, as well as such instruction as is intended to and generally does gain conviction by the weight of previous experience of others rather than by the weight of argument appealing to the individual mind alone.

That tradition in this comprehensive sense does play an essential part in the moral life of the individual there can be no doubt. It is important to point out what this part is; to vindicate its place in moral experience; and to show that it is indispensable to morality, which is the interrelation of human individuals with one another by action, thought, and emotion.

The moral order of a man's life is carried on under temporal conditions. While it is always focussed in the present where alone the individual is in direct communion with his fellows, it keeps a man in continuity with the past of his society, and it prepares and points the way towards the future. Moral activity consists, from one point of view, in a succession of changes, for it is meaningless without acts, and an act is in some sense a new event. The succession derives from a partially known past, passes through the better known present, and proceeds to a relatively unknown future. These stages are quite inseparable if a man is to maintain the substantial unity of his own life; they are equally inseparable if he is to maintain his union with his fellows in society.

The most familiar and unmistakable illustration of the continuity between the individual and the past of his society is found in the

language he employs to express his ideas, whether moral ideas or other ideas. This is not simply a means of communication with his fellows in the present. However much it is modified by present use, it is never the creation of the living individuals who use it at any given time. It is a social heritage which a man acquires without testamentary title, and upon which he seizes with the instinct of self-preservation. In it there lies, as in a palimpsest, the accumulated mental life of antecedent generations. It is the current coin of thought which bears the image and superscription of the universal mind, which animated the intercourse of individuals in the past, blends their lives in the present, and thus establishes intellectual fellowship between one age and another. The language of a society, therefore, does not merely enable a man to understand those who went before him; it compels him to understand them in order to be understood by those who live with him. He cannot take up and lay down this medium of communication at will, as if it were some instrument at his arbitrary disposal. It is doubtless his own and his own by inheritance, but only in the sense that it is the common bequest of the society from which he derives this birthright and which ensures his allegiance by the gift and the acceptance. By the marriage of his thought to the speech of his community he has given hostages for the loyalty of his mind. By conferring upon the individual the incalculable benefit of orderly channels of communication with the minds of others, society thereby takes indirect security on its own behalf against the ingratitude of his intellect. In the case of the normal individual the benefit is readily acknowledged: he cherishes as sacred and cultivates as best he can the language of his people. But whether with or without acknowledgment, there is no escape from the control exerted over the course and character of the ideas of human beings by the modes, forms, and rules of expression which came from the past. They partly shape what he has to say to his fellows, still more how he is to say it, and altogether how he is to become intelligible. The consequences of ignorance or neglect of speech are misunderstanding, fear, and isolation, consequences which no moral agent can face with equanimity. Words have an accepted meaning long attached to them which tradition has stamped with approval and current usage supports, even should innovation modify. The very fact that all agree generally on the meaning makes the individual feel a fellowship with a whole people in establishing intimacy with an individual. Language symbolically lifts his thought out of its particular connection with the passing state of his own transitory existence, and enables him to realize that his mind has an inner connection with his ancestors as well as his contemporaries. And the more fully he becomes acquainted with the language of his people and all that it contains in song and story and literature, the more

does he feel that his particular mind can hold communion in no metaphorical sense with all those who have gone before him. The indirect effect of this is remarkable. It tends to create, in some individuals to a high degree, in all individuals to some degree, a unique feeling of loyalty to the vanished and invisible members of the society of the dead, which is thus so closely bound up with the society of the living. It is as if those of earlier days appealed to those of a later time to preserve the common thought which made their own life possible as representatives of a common stock of humanity, appealed to them to keep faith and contact with the past, to remember and not to forget. Loyalty of this kind profoundly influences the whole moral attitude of the individual. It stimulates the worship of the heroic, kindles admiration for those who are altogether beyond the reach of envy or jealousy, and awakens reverence for the social institutions which are rooted in the past. The reaction of such ethical emotions on the life of the present is too obvious to require comment.

What has been said holds of language considered both as a specific kind of tradition, as itself one way in which tradition plays a part in the life of the individual, and as a vehicle for handing on the written or memorized achievements of the past.

Language again promotes the moral life by supplying the terms in which moral relationships have been and are embodied. The mere assimilation of these terms from the earliest stages of childhood onwards helps to give precision and definiteness to the highly involved character which human intercourse possesses. In all societies some situations in which individuals stand to one another have been selectively distinguished from the endlessly varied complex of social adjustments. Either because of their prominence or their importance for a type of social life, these have been given specific names. They are the names of the virtues or the vices or the frailties of individual character, which are lauded or reprobated, approved or condemned. Upon these the mind of the individual is from the first concentrated; around these his moral emotions gather; and by them his moral life is guided. Each acquires a nuance of suggestion; each colour of good and evil has a peculiar texture of interest, which catches or arrests the hesitating and wandering will of the individual, without any need on his part to gauge consequences and effects. So closely can moral situations become identified in the mind with the words which convey them, that the very names have the power and authority of actual moral demands.[1] The bare mention of courage and kindness,

[1] This curious effect is fairly familiar in everyday life. Hardly in any other sphere have words such an influence as they exercise in moral experience. They appear to be regarded at times not as symbols, but as the very facts denoted, or at least as inseparable from these facts. Some people seem even to suppose that morality consists solely of the terms in which the moral life has found expression, as if language could wholly contain and had exhaustively

cowardice and cruelty, will vibrate through the character, and raise or depress the moral nature of the individual.

Another form in which tradition enters the individual's moral life is through custom. Its operation is sometimes assisted by language, in certain cases to an important degree. But it is specifically different in its process of operation. Customary procedure consists solely in ways of acting, general and relatively uniform in character, which have been handed on from one generation to another largely by imitation and suggestion, and to some extent by direct instruction. Customs do not concern the feelings except indirectly; and they are not ways of thinking except in so far as thinking subserves action. As long as the customary acts are performed, other correlative states of mind are at best subsidiary and at worst indifferent to those concerned with customary performance.

Customs are imposed on the individual without any necessary appeal to his consenting reason. They are accepted because they are imposed by the collective intent of those who already follow them, and because those on whom they are imposed are at the time relatively uninitiated into the society to which they belong and therefore relatively incapable of fulfilling the purposes or of meeting the situations with which the customs are concerned. The inferiority of the uninitiated relatively to the initiated inevitably induces the former to bow before the capacity for effective and successful adjustment which the latter can make. The superiority which always comes from orderly procedure of any kind carries with it an authority which is more or less readily admitted by those who do not or cannot of themselves conform to that order. This authority is one source of the sanction which the custom possesses for those who come to accept it. The other source is the collective pressure which is or can be brought to bear on the individual to induce him to fall in with it. For customs, being acts of a certain kind, can always be taken to constrain as well as induce an action in another, or to prevent action of a different kind. In the more important customs, the whole weight of the authority of all who have followed the custom in the past and who do so in the present, combines with the collective pressure of the whole society to give these customs a sanction which any particular individual can hardly presume to dispute. Such customs are not merely sanctioned, they are even regarded as sacrosanct.

conveyed all that moral experience is. This partly accounts for the reluctance which most people have to analyse and discuss morality, and for their incapacity to think about morality with detachment and impartiality. It also accounts for the difficulty in finding hospitality for new moral terms coined as the result of a fuller development of the moral life, *e.g.*, generosity to enemies, humility of mind. They appear at first as an interference with the current moral order; they are an obstacle or "foolishness."

Customs are not all equally important. But they all have the same general character above described. They operate in widely different areas of social life: there are customary ways of carrying on an occupation, customary ways of ceremonial behaviour, customary ways of acting towards classes of individuals in a society. The efficacy of a custom and the efficiency of the sanction will be found to vary from society to society and according to circumstances. Moreover, while customs prevail in all societies, some are more completely guided by custom than others. All this, however, does not affect the main fact that to a marked extent tradition in the form of custom does shape the moral intercourse of individuals.

The operation of custom implies the existence of a relatively stable society which has had a continuous life of its own for a considerable period of time, and which has developed and established, to some extent, institutions peculiar to itself. Customs are always social forms of procedure, and they subserve the life of the particular society to which they are relevant. They are functions exerted in the interest of the conservation of the society. In this respect they resemble instincts in the life of an organism. All instincts operate in the interest of the preservation of the organism; and no instinct—not even the maternal instinct—is normally destructive of the organism. Similarly customs have as their ultimate object the preservation of the society, the more important customs equally with the less important lead to this result. It is inconceivable that any orderly mode of action could be uniformly imposed upon successive generations of individuals, if its effect were to imperil or destroy the stability of a society. Doubtless stability does not constitute the whole of a society's well-being.[1] But it is essential for the continuity of a society; and without continuity a society is a herd and not an orderly arrangement of human beings.

While customs are, in the way indicated, comparable to instincts in the organism, in an important respect they differ from instincts and are closely akin to habits in the individual. Instincts are primarily inherited and specific modes of response of the natural individual to his environment without any prior training or experience. Customs arise and are always acquired; they are relative to a particular society of men; they are in the first instance the result of experiment and experience; they become confirmed and established by successful repetition of actions under similar recurrent conditions; and they may be changed or in certain cases abandoned in course of time. In all these respects they clearly resemble habits

[1] Hence customs which secure stability at the cost of other important elements of human welfare will in course of time be found to be bad customs. This gives rise to the revolt against custom. But it seems meaningless to describe any custom as "inherently bad."

in the life history of the individual. On the other hand, they differ from such habits in that habits vary from individual to individual in the same society, whereas customs are common to all the individuals concerned. Habits involve selective adjustment to an individual environment; customs are compulsorily imposed adjustments to a common environment. Habits may be inherently destructive of the life of the individual from the first (*e.g.* vices) and may be condemned even by the individual whose habits they are; customs are experimentally tried forms of social conservation and are always in some degree approved while they last.

Customs are expressions of the common life of a society. They are general in their operation; and they involve a recognition, more or less explicit, of identity of interests and purposes between individuals and between successive generations. They at once imply and create a community of moral attitude in a plurality of moral agents. People who act in the same way in similar circumstances feel like-minded in relation to one another. And like-mindedness is one of the essential achievements of the moral life at its poorest as well as at its best. Once established, it tends to remain and develop in other directions, in feeling and thought as well as in action. There thus come to be similar ways of thinking and feeling as an indirect consequence of customary action. Behind all customs lies some exercise of reason; for customs are consciously general and orderly in their operation; they regulate action in uniform ways: and these are characteristic manifestations of the life of reason. The effect of following customs is thus to cultivate and encourage the consciousness of rationality in the individual and of community of reason between individuals.

It is because of this character and effect of custom that certain customs become definitely formulated and become rules of common behaviour instead of merely customary ways of behaving. If and when this stage is reached, the sway of custom as such is modified or ceases altogether. It is modified if the sanction peculiar to custom effectuates the operation of the rule, as for example when a rule is followed simply because it is the custom to follow it. It ceases altogether if the rule is adopted by the individual as a regulation for his own action, and without reference to any authority which it derives from the past. In the latter case the rule is made effectual in its operation by reference to the anticipated consequences which result from following it or, more commonly, the consequences which result from not following it.

There is thus a marked difference between leading a regular life according to customary procedure, and living by rule, even if the rule can be traced back to some custom in the past. The individual who follows the custom has regard to the general benefits directly

or indirectly secured. The individual who lives by rule has mainly in view the disadvantages to himself which issue from not following the rule. The former accepts the custom under a non-rational sanction; the latter finds a reason for accepting the rule in its appeal to his self-interest. The former would in most cases follow the custom even if it led to his disadvantage; the latter would generally in such a contingency question the bindingness of the rule.

Custom being essentially a uniform procedure imposed upon individuals is very frequently supposed to be an enthralment of individual life, and custom comes thus to be set in opposition to individuality. This is largely mistaken. Custom is the primary charter of social institutions which alone give constructive and relatively permanent embodiment to the moral relationships between individuals. Wherever we find customs we find institutions of some kind, be the institution a political state, a village community, or any other institution which may arise within those large organizations of men. And conversely, wherever we have institutions we shall find customs of some kind, either alone controlling the institution or operating alongside formulated rules. To fall in with a custom is thus not to enthral but to enfranchise an individual as an accepted participating member of an established order of human life. He becomes an acknowledged shareholder in the accumulated moral substance of the institution. His adoption of the custom involves him in consequential moral relationships with others beyond his power to calculate or anticipate. His individual life is necessarily expanded to its wider issues in the process. His isolation, with its accompanying weakness, is overcome. The horrors of moral solitude, which haunt individuals, melt away. Narrowness of mind and the fear of his fellows —the greatest fear to which a human being can be exposed from any finite creature—disappear in the consciousness of orderly co-operative action with others for a common end. Hence the remark of the wisest man of Greece that to be moral is to live in accordance with the accepted social order of your own country; and hence, too, the wisdom of the answer of Pythagoras, when someone asked him what was the best education for his son, "make your son a citizen of a people with well-established institutions."

Custom, as we have seen, is a uniform and relatively systematic course of action to meet a common human need. It is a ready-made plan of adjustment to a situation, which attracts because it is ready-made, which it saves time to accept, and which few individuals left to themselves would have either the capacity or the energy to contrive with even approximate success. To take the line laid down by custom is to take the highway of safety; for a well-trodden road is generally the safest, and it invariably leads to a definite end. A custom affords an orderly and to that extent a reasonable way of

living; it therefore enables the individual to make use of the reason of others in occasions obscure to his own. And everyone, no matter how intelligent, faces at some time, and that not infrequently, such situations. "The measures of conduct proper for the different occurrences in life are so various that it is impossible for any man to trace them all to their foundations."[1] Where a man cannot guide himself and yet must act, his best course is to follow if others have found a way before him.

Behind all established customs there lies a long course of experiment, of trial and failure, leading to a final accommodation of practice to purpose. Every custom thus represents the capitalized experience of men. To accept its prescripts is to draw interest from the funded moral capital of the past, and to enjoy as an inheritance an unearned increment of moral advantage in the present. The conditions of social existence are not handed to man at birth as a gift: they are discovered and acquired in the process of social intercourse. In virtue of those peculiarities of man's nature to which we have previously referred, a society can accumulate, and stereotype for the common well-being of all, those social aptitudes which give it stability and continuity. Without this, man would be always recovering the same ground, re-learning the same modes of adaptation to his fellows. His constitution as a human individual is constant, and the moral situations he has to meet are relatively limited in number and repeatedly recur. There is therefore neither occasion nor reason for challenging established custom; for the individuals doing so would have merely to re-learn at their own expense, instead of at the expense of others, the form and merits of the customary procedure which they oppose, with the added disadvantage that there would be no guarantee that a better could be found. It is the distinctive feature of man as compared with other animals that he can adopt and adapt the findings of the experience of others, both his contemporaries and those who have preceded him. The influence of custom is but an illustration of this general characteristic. In this as in other cases, individuals recognize almost universally that the presumption of advantage is on the side of the general practice by which a social situation is adjusted. Hence the emotion of respect for custom as custom becomes an adjunctive support for the authority which a custom otherwise possesses, more especially in the normal, well-disposed member of a society. The disposition to comply with a custom will often turn the scale in its favour, even when it seems to operate to the disadvantage of the individual at a particular moment. When to this is added the confidence of the many who follow the custom in the accumulated experience on which it rests, the opposition to the custom on the part of anyone or of a few can count for little

[1] Tucker: *Light of Nature*, II, p. 597.

and can secure still less. No one, especially the young or inexperienced, can run counter to a customary mode of behaviour in a community without the serious risk, indeed the practical certainty, of breaking their heads or their hearts in their career; and the contempt of the outcast for the conventions which have been challenged will, in most cases, be but the parade of defiance in a weak cause in place of the consolations of defeat in a great one.

Custom is one way in which men have learned by experience how to live together, and is thus a framework of moral goodness. The good it secures may be commonplace, but any goodness is preferable to none, and is at worst the basis of a better. It will always gain the support of all the well-disposed on that account; and it requires no great wisdom to recognize and to insist that men have first to be accomplished in ordinary goodness before they expect to attain that which is extraordinary. Few men have any distinctive individuality worth emphasizing: none that is worth over-emphasizing. To reject experience in the moral life is to despise mankind, and that is to be on the threshold of immorality. Experience teaches virtue, and in certain cases it creates virtue. One of the virtues it calls forth is prudence. The wisdom that knows how to use the experience gathered from the past is a constituent element in every normal moral life. Nor is it possible for anyone to suppose that in the short period of his existence he can discover much that is altogether new in moral experience. In this sphere where men for generations have striven to accommodate their lives to one another, it may well be held by the majority of individuals that

> Das Wahre war schon längst gefunden,
> Das alte Wahre fass es an.

Even should a custom do little more than impose restraints on the actions of individuals in relation to one another, such restraint involves a measure of intercourse between human beings, and this intercourse, as we have seen, is the sphere of morality.

It is in the light of the foregoing remarks that we should understand what is meant by the formulation of moral laws, and how such formulation has come about. A long tradition of customarily established forms of behaviour lies behind all such articulation of the moral life into moral codes. A time arrives when the orderly ways of behaving become so well recognized that formulation is a natural and a necessary step, so that the formulation gains immediate acceptance. Since the laws carry within them the authority of the distant but forgotten past customary order, the laws take upon themselves the antiquity which they conserve in language. And since the beginnings of the custom lie in the dark obscurity of an age long past, the laws themselves seem to have come out of the

dim mystery of unknown antiquity and to have been given with the original nature of man—a view which is true in a real sense; and being so given they are held to have come from God. It is most interesting to note how this was interpreted by two such different nations as the Hebrews and the Greeks. The Hebrews with picturesque impressiveness and poetic suggestiveness considered their fundamental moral code to have been given directly by God to the early leader of their people, who received it and wrote it down on tables of stone after an interview with God on the cloud-capped heights of Mount Sinai in the wilderness—the cloud symbolizing the distant and irrecoverable antiquity of the past. The Greeks, with the intellectual penetration and restraint characteristic of their nation, declared that Justice and the moral laws are the unwritten and unfailing statutes of heaven itself to which Zeus and the gods below as well as mortal men are subject. That is to say, the orderly behaviour, to which the formulation of laws gives articulate expression, is part of the constitution of the world. In the familiar lines of the *Antigone* it is said:

> Not of to-day nor yesterday but for ever do they live,
> And no man knows what time they came.

From every point of view, therefore, it appears that custom is an indispensable condition by which the moral life of the individual is sustained and promoted.

It would be untrue to say that its force and influence are confined to primitive societies, or societies at a low level of civilization. Doubtless in such types of community custom has a wider domain of operation than in the higher societies, where the rule of formulated law plays a much greater rôle than the order of custom. It might in fact be shown that as societies pass from a lower to a higher level of organized life, the transition is marked by the change from the control of custom to the rule of formulated law. For at the lower levels of human society more can be effected by imitation and suggestion, which are characteristic of the operation of custom, than by leaving individuals to apply a law for themselves. But it cannot be denied that in the highest societies much of the orderly life of a community is due to mere customary observance, and not to any knowledge of explicit law. It is doubtful indeed whether law alone could secure order, if respect for customary procedure broke down. Rules would seem to be of little avail where customs altogether fail to gain acceptance. For it is evident that the complex system of laws, by which the higher societies are regulated, is unknown to the vast majority of people to whom they apply and for whose benefit they have been enacted. It is the business of a specialized profession to understand and interpret these laws on behalf of those

affected by them. The ordinary citizen generally knows less about them than he knows of the rules of his physical health. Yet the mass of the community, though ignorant of such laws, adapt themselves to one another from day to day with relative ease and success. The reasons for this apparent paradox are that customary modes of procedure, apart from laws, continue to guide individuals into orderly ways of adjustment; that customary procedure is partly the basis of law, partly an order of the same general kind as law[1] and partly is but articulated by formulated law; and—a point equally important—that the will to secure the interest of all in the acts of each is the mainspring alike of custom and law.

Another form in which tradition can exert a potent influence on the life of the individual is through the family. This holds of some societies more than others, and of some classes in a society like our own more than of other classes. And it operates both to the advantage and the disadvantage of the individual; but on the whole more in the former direction than in the latter, for the disadvantages appear, when they appear at all, mainly in the form of a certain narrowness of moral outlook which is but the counterpart of the exclusiveness characteristic of family life. Taken all in all, a family tradition is one of the effective supports to the morality of the individual. Its importance is recognized in many ways. In the quasi-religious form of ancestor-worship, the ghostly spirits of past members of the household brood benignant round the altar and the hearth, giving a sense of permanence to the purposes which control the daily life of the family, and animating its component units with a fuller consciousness of their common interest in one another. In another form the resources of art, *e.g.*, family portraits, are utilized to keep fresh in the memory and imagination of the living the features and the character of former distinguished or even undistinguished representatives of the family; and however unsatisfactory such memorials may often be as works of art, their significance as a means of sustaining a continuity between past and present and of promoting morality in the individual life is unmistakable. This may be done by linking his life to a standard of excellence which has been attained by his own kindred; or by affording him the adventitious advantage of vicarious merit; or by merely fostering family pride, which, in its best and even in its worst form, tends to refine and harden the moral fibre in the hour of conflict, and to soften the asperities of moral censure in case of a fall.

Again, there seems little doubt that though an individual's domestic traditions are restricted to what he has gathered from association with his immediate kindred and progenitors, the recollection of their lives can become a permeating influence in his own.

[1] Cp. J. Grote: *A Treatise on the Moral Ideals*, p. 420.

And the filial piety which leads him to preserve their presence by a memorial, however crude, is an open testimony to the claim which they exercise over him and his loyalty to the purposes of good which he shares with them.

Family tradition operates in the life of the individual in a different manner from custom. The latter concerns action only, and such action as has a bearing on the wider issues of the community as a whole. The influence of family tradition concerns more particularly the feelings and sentiments, the scruples and prejudices, the convictions and even the conscience of the moral agent as a unit in a family group. Example here plays a larger part than either precept or prescription. Respect for the family standards and mode of life embodied in individuals becomes indissolubly bound up with self-respect; loyalty to the family, with the pursuit of individual good; admiration, born of the past achievements of others and nurtured in recollection, with confidence in the special purposes which the individual has accepted from them and shares with them.

Various factors indirectly co-operate to foster family tradition and bring its influence to bear on the individual. The most potent of these, and, where family tradition generally holds sway, the most common, is probably religion and all that this implies. Nothing, in fact, seems to counteract the natural effect of family tradition so easily as the absence of a common religious life, or a discordance, whether open or secret, in the religious life, between past and present, earlier and later, generations of the same family. But where family tradition is most pronounced—and it varies greatly in the incidence and force of its influence—other indirect factors besides religion play a very important part. We perhaps see it at its best in those homes, exceptionally favoured by fortune, by circumstance, as well as by nature, where the family life has been enshrined for generations in an environment of dignity and beauty, which commands and keeps captive the affections as it ennobles the imagination; where the successive representatives have been accustomed to give and receive honour, and to justify their station by the fulfilment of its responsibilities; where selective breeding has combined with moral training to produce a cast of character in which the elementary virtues are tempered and refined to gracious forms of social adjustment appreciated by all but accessible to few; where the resources of art and of knowledge become the ministers of human well-being, elevating social intercourse and adorning the spirit; and where religion itself is utilized as a properly disposed ordinance for consecrating and conserving the stately structure of family welfare. In such cases the power of tradition has certainly its greatest opportunity, and as a rule irresistibly dominates the individual moral life in a manner hardly found to the same extent in

family groups less favourably situated. In the latter the influence of family tradition is modified more readily by influences drawn from other sources. In the cases above described the individual bears the impress of his domestic group so unmistakably on his character that he seems the carrier and transmitter of an ancestral type of moral life recognizable by all and constant in its main features from generation to generation.[1]

In addition to the forms of tradition above discussed, there are certain kinds of tradition which, especially in a highly complex society, indirectly promote union between man and his fellows. It may be said that every kind of invention which assists man's control over the processes of nature settles down into a traditional mode of adjustment to nature. It becomes inseparable from the order of life prevalent in a society, and becomes both a cause and an effect of the continuity of the society and enters into the social heritage of successive generations. Individuals are dependent on the adoption of such a heritage if they are to conform to their society. And when individuals are jointly dependent on the same heritage, they become interdependent on one another. By sharing the same heritage, they are not only knit together, they intensify their common interest in each other, and tend to manifest this sense of community in ways of thought, action, and feeling only remotely connected with the heritage which is the occasion of extended intercourse. Illustrations of this are innumerable. The socially inherited mechanical devices to expedite travel and communication not only constrain individuals to learn how to adapt themselves to these devices and to utilize

[1] It seems worth noting that the family institution is never so stable as in a country where tradition animates its life, and that the absence of the influence of family tradition of some kind on the individuals' moral life is generally an impoverishment of moral resources, and in many cases means irreparable loss. It is also significant that where respect for family tradition wanes, respect for the existing order of family life seems invariably to decline.

Again, where revolutions in society bring the family traditions of any section of the community to contempt or to ruin, the result seems invariably to involve moral chaos in the whole society. Whether the contempt is caused by the arrogance of distinguished families or by the envy and jealousy of the rabble, matters not: the effect is the same. Where, on the other hand, a revolution leaves untouched the family tradition and what it implies, the social order as a whole is not endangered, and the community will quickly survive the upheaval. This observation seems confirmed, if we contrast the course of revolution in France in the eighteenth century with that in England in the seventeenth century, or in France itself in the nineteenth century; or, again, the course of contemporary revolution in Russia with that in Germany in recent years.

A society may survive the loss of its customs and customary traditions, for custom can be replaced by law; but the loss of family tradition undermines the very foundations of the lives of individuals on which all social structures rest.

them, but make individuals dependent on each other in the process. The devices are not merely means for organizing and facilitating social intercourse; they assist in creating further interest between human beings, and so deepening the sense of social relationship. Common emotions are awakened, common ideas suggested, common actions promoted by the mere fact of using such machinery. Railway and telegraph have not simply facilitated interchange between individuals; they have widened the social sympathies, enlarged the social imagination, increased the boundaries of expectation, duty, and reliance between human beings, not to speak of the expansion of the sphere of rights and obligations in the legal sense. Just as on board ship the temporary association of individuals on the voyage creates a common interest between them, were it for no other reason than their common share in the perils of the voyage and their need for trust in one another; so the machinery of social life, once it becomes part of the social heritage, reacts indirectly but profoundly upon the moral attitude of individuals towards one another.

It has been pointed out[1] that the establishment of a social heritage for the furtherance of human life necessarily modifies, both physiologically and psychologically, the individuals who are constrained to use it. The suggestion is important and is evident on analysis. The moral effect is equally significant. Individuals so modified become not merely increasingly dependent on such a heritage. They become ever more dependent on one another for carrying on the joint enterprise of social life. They are constrained to understand each other; and their understanding is facilitated by the similarity in their composition resulting from the modifications brought about. They are compelled to act together and to correlate their activity; for the failure of one may mean the misery of many. And when specialization of function is in consequence carried to a high point, their social adjustments become almost stereotyped in their regularity and calculability.

An important form of social administration operates in a similar way. Once established, it becomes in a short time a part of the plan of social life which individuals accept as a heritage from the past, and to which they accommodate themselves willingly or otherwise. Their common direct interest in it makes them dependent on each other; its indirect effect upon them is such as to modify and intensify their moral attitude towards one another. Thus, for example, the system of National Health Insurance has not only made those individuals concerned in it more dependent on each other for the effective accomplishment of the system; it has profoundly influenced the sense of the moral value of the individual life, and, in the case of the very poor, has changed the attitude of patient to medical practitioner.

[1] By Wallas: *Our Social Heritage.*

The last point is as interesting as it is curious. Formerly the visits of the medical attendant were grudgingly accepted as an unfortunate necessity. Their repetition was viewed mainly as a cause of steadily increasing expense, which was borne with reluctance and could be met with difficulty. The life of the patient was estimated in terms of money; the services of the doctor were intrusions of a kind of health police and a tax on the family resources. With the establishment of the new system, the services of the practitioner are claimed as a right instead of accepted as an uncomfortable necessity; the life of the patient is looked upon as valuable for its own sake; and the doctor has come to be welcomed as a friend of the household. These moral results are clearly indirect consequences of a form of administrative machinery which has assumed its place as a part of the traditional procedure of a society.

It would be tedious to deal in detail with the various ways in which different social institutions which arise within a society, affect by their traditions the relations of individuals to one another, and influence the moral life of the individual accordingly. We have but to mention such institutions as old schools of long standing, more especially schools for certain relatively exclusive classes in a community, Universities, Churches (local and national), trade guilds, stereotyped professions. These indicate the several forms in which tradition has been and can still be brought to bear on the individual, shaping his sense of honour, controlling and modifying his moral judgment, limiting or expanding his appreciation of justice in his dealings with his fellows. It would be useless to pretend that these institutions are external to the moral life of the individual. No doubt some of these institutions affect his relations to his fellows less intimately than others. Some are concerned with the acts of individuals only, and it may be acts of a general kind which barely reveal a particular character: some permeate the feelings and are more intimate in their influence on character. But one and all in some degree provide areas of the moral life in which individuals meet, respond, interact, and hold intercourse with one another; and that is the very substance, structure, and composition of morality. The traditions, therefore, which grow up and animate these institutions are effective in moulding the moral attitude of the individuals successively composing them; for tradition is inseparable from institutions, and institutions (as individuals realize more fully the more moral they are) afford the opportunity for the effective maintenance and development of their various purposive relations with one another.

It may be said that there seems little left of the individual, and hardly any place at all for distinctive initiative on the part of the individual, if we abstract from him all the traditions which influence

his life. Tradition, however, only emphasizes one factor in the moral life—the indissoluble continuity of the moral life of the individual with the *past* of his society. Institutions which live through traditions are constantly being modified, coming into being or passing away; and institutions act and react upon each other within a whole community. Customs are themselves subject to the criticisms of experience, and customs sometimes pass away. "God reveals Himself in many ways lest one good custom should corrupt the world." The moral life of the individual has to do with the future as well as the past; the purposes and needs of individual lives give rise to institutions, modify and extinguish institutions. The existence and operation of law bear witness to the need of other conditions of moral activity than are satisfied by institutions alone. In all these spheres, therefore, there is ample room for the initiative of individuals. And this may be admitted without losing sight of the profound importance of tradition in the individual life, or of the need for cultivating respect for tradition as an essential factor in moral experience.

There is a tradition in men's beliefs, which men acknowledge the more readily because beliefs are strengthened by antiquity; and their adoption by many in the past helps to give them the quality of universality in the present. There is also a belief in tradition from which men cannot in the long run escape, for it is both created and confirmed by tradition itself. It seems the correlate, at the level of the higher mental life of man, of the continuity of the human race. This continuity is secured in the lower planes of organic life in the form of primary instincts operating as functions for the conservation of species. The consciousness of tradition is peculiar to the self-conscious life of man, and its function is to conserve social organization in which man works out his characteristic destiny. The lower organisms face one way only—towards the future; and their instincts operate in the present without prior experience. Man looks after as well as before; and tradition is the way in which in social life he looks backward and avails himself of the experience of others to assist his own in the present. He cannot escape from it if he would realize his capacity for intimate social intercourse with his fellows. The more he knows of himself the more he admits he would not escape even if he could.

MECHANIZED MENTALITY

Professor JOHN LAIRD

Nobody should want to rid his mind of science, but why should science want to rid us of our minds? In the name of science, however, clever men have given their minds to that very enterprise, although no doubt with the explanation that they were only ridding us of what we had falsely thought to be our minds. Thus in the eighteenth century La Mettrie presented the thesis that man was a machine. In the nineteenth, Huxley tried to show that we were conscious automata. In the twentieth, Mr. Hogben,[1] among others, professes to deduce from Pavlov's[2] experimental results that consciousness is a superstition, being only a misdescription of conditioned reflexes. I propose, then, to examine the modish form of this persistent doctrine.

What is claimed, broadly speaking, is that the methods by which men, up to the present, have attempted to understand themselves, their fellow-men, and their fellow-animals have been radically misdirected; that, until recently, there was some excuse for man's failure, since physiological science, except for vague aspirations, had no effective alternative to offer, but that now, after Pavlov has spoken, there is no need to remain unscientific any longer. At long last, three centuries after Galileo, the lynx of science has shaken the last flicker of life out of Cerberus, the decrepit guardian of the gates of superstition.

We should first consider, therefore, what sort of animal Cerberus was, that is to say, what sort of superstition is supposed to be represented by the word "consciousness," and why the term is supposed to designate something thoroughly unscientific.

The substance of the complaint is that "consciousness" is the name of a sham with two delusive roots, one of them called "introspection" and the other called "teleology." The pseudo-science of psychology (old style) is said to be based upon the antiquated superstition that by a hocus-pocus called "introspection" we can discover the "motives" of our actions, and so are able to explain the actions of men (or of cats and dogs) by reference to these "motives." All this verbiage should be jettisoned by anyone who has come to understand the reality of these matters, viz. the truth about conditioned reflexes.

The alleged objection to introspection is that it *must* be unscientific,

[1] In *The Nature of Living Matter*, hereafter cited as *L.*

[2] See *Conditioned Reflexes*, Eng. trans., hereafter cited as *C.*

because, by its own showing, it is always a private affair. It is but "inward looking" into one's *own* mind. A pre-requisite of all scientific experiment, however, is that it should be a public enquiry, that is to say, that the observations on which the conclusions are based could be checked, in principle, by anyone. (I say "in principle" because laboratories may be too expensive to be thrown open to the public, and because untrained observers might be quite unable to see that anything significant was happening in them.)

The objection to teleology, that is to say, to purpose and to volition, as a canon of explanation, is (we are told) that it could never explain. Science knows that there is only one way of explaining natural facts, viz. the push and pull (or is it only the push?) of mechanical forces. That is the very meaning of scientific determinism. "Teleological" explanations are indeterministic, animistic crudities. They are makeshift expedients in the way of explanation, and are quite incapable of enduring any prolonged scientific strain.

Such, then, is the accusation; but it is also important to observe why the dawn at last is said to be breaking and the glorious hour arrived for putting an end to Cerberus and his activities.

According to Pavlov (*C.*, 3), the reason for our prolonged immersion in crepuscular pseudo-science was the backward condition of physiology, and, more particularly, of the particular department of physiology that deals with the central nervous system. It was only about 1870, Pavlov says, that Munk, Ferrier, and others began to study the effects of surgical extirpation upon the cerebral hemispheres of animals, and although these investigators claimed that they had been able to demonstrate the localization of psychical functions in the cortex, it was obvious that such rough and extravagant presence-or-absence methods could scarcely expect to demonstrate how the hemispheres functioned in detail. (As Pavlov says, one could not learn much about the mechanism of a watch if all one could do experimentally was to drill largish holes in various parts of it.) Even after 1870, therefore, (according to Pavlov) physiologists in fact had recourse to other, *i.e.*, to introspective, methods in their study of man's higher nervous functions, and had to think of the other higher animals on analogy with mankind. Indeed, the scientific part of physiology at that time began and ended with the study of the reflexes of the lower nervous paths. But the new experiments upon conditioned reflexes changed all that. They proved that "scientific" methods could be applied to the entire nervous system, that is to say, to all nervous process that (as we used to say) subserved every mental function. Hence (according to Hogben, for Pavlov is much more cautious, although I think he means much the same thing) we can now "mechanize" consciousness in all its operations, and bury the remains of Cerberus in quicklime.

I have said that Pavlov is more cautious than many of his followers. "It would be the height of presumption," he says, to quote but one of many similar passages, "to regard these first steps in elucidating the physiology of the cortex as solving the intricate problems of the higher psychic activities in man, when in fact, at the present stage of our work, no detailed application of its results to man is yet permissible" (*C.*, 395). Even regarding his dogs (poor things) he was "not concerned with the ultimate nature of excitation and inhibition as such" (*C.*, 377); and he speaks (*C.*, 330) "with the utmost reserve." Mr. Hogben, however, shows no reserve at all. The traditional distinction between reflex and voluntary activity, he says (*L.*, 41), has been finally abolished. "Conscious" behaviour should simply be called "conditioned" behaviour (*L.*, 48). Commonsense "consciousness" should be "disintegrated" into reflexes; and the phenomena of learning, of memory, of attention, and the like need no longer be treated as somehow peculiarly "mental," or regarded in the bad old unscientific way. He admits, of course, that much in detail remains to be done, but claims that, on the major issue, the battle has been won. It is this general claim that I want to examine (if I may be permitted to use the meaningless, because unscientific and teleological-introspective word "want").

It should be noted, to begin with, that Mr. Hogben's larger objections to introspection and to teleology do not seem to be very strong. I can never feel anybody's toothache except my own; but the privacy of one's toothache seems a slender reason for denying that there is any such thing as toothache. In a disreputably unscientific way, toothache seems nevertheless to exist; and since most scientific gentlemen inform us that all our perceptions vary from individual to individual, it may be doubted whether, strictly speaking, *any* experimental observation has the sort of publicity that Mr. Hogben claims for all such evidence. Introspection, then, does not seem to be wholly discredited by Mr. Hogben's arguments (however it might fare with other arguments), and the attempt both of Hogben and of Pavlov (*C.*, 6) to claim that teleology is a superstition *because it is indeterministic* seems clearly to have been conceived in error. I shall not stay to consider the obvious retort that Sir Arthur Eddington and other distinguished modern physicists assert that determinism in physics is a superstition in theory and a nuisance in practice, and I am willing to argue on the assumption that these distinguished writers are wrong. What interests me more is Mr. Hogben's ungrounded assumption that teleological methods *are* necessarily indeterministic. Even the animal that Mr. Hogben seems to consider the most ludicrous of all Nature's charlatans—I mean a "regius professor of moral philosophy"—may consistently (so far as I know) be both a teleologist and a determinist. Certainly many of

them profess to be both; and the reason that Mr. Hogben adduces, namely, that *prediction* should theoretically be possible, is, so far as I can see, no sort of objection to teleology. Most teleologists, I submit, make pretty confident predictions about the movements of railway trains on grounds that are very largely teleological, viz. that engine-drivers, from wage-earning motives and from the desire to do their jobs efficiently, try to run the trains according to schedule, and, again, because a sufficient number of moderately opulent people want and expect a good train service. Is it likely that Mr. Hogben, from his scientific non-teleological data, would be able to predict these matters with greater accuracy?

Let us pass, however, to less metaphysical contentions and consider the more specific arguments of these authors, viz. that ever since Descartes[1] in the early seventeenth century (see *C.*, 7) physiologists could deal with reflexes in their own scientific, non-introspective, non-teleological way, but not, in this way, with memory, learning, and other such functions; that now they *can* deal with them; and, consequently, that a change of infinite importance has occurred.

This broad argument has several subdivisions, and it seems advisable to deal with each of them in turn.

(1) In the first place, it is claimed that purely objective methods are used. Hence the inference appears to be drawn that no facts except objective facts occur.

Plainly, however, no such conclusion follows. In the simplest instance of a conditioned reflex the facts are as follows: A dog salivates when food is set before him. That is a natural or unconditioned reflex. He can be trained to salivate to the sound of a gong if the gong is frequently sounded at dinner-time. That (when the gong is sounded without the dinner) is a conditioned reflex. Gong and dinner are quite objective, and so is the salivation (which can be carefully measured if the dog, by a surgical operation, is made to dribble at the side of the mouth instead of salivating in the ordinary canine way). It does not follow, however (whether or not it is true in fact), that everything that occurs is objective because the stimuli and the measured reaction are objective. A mother slaps her child and the child weeps. Measure the lachrymal flow if you like, and you will never prove that pain does not occur, or produce the smallest piece

[1] The most recent English expositor of Descartes (Mr. S. V. Keeling in his *Descartes*, p. 259 n.) states that the *term* reflex "appears to have been coined by Willis (1699), and not until 1784 was the general theory of reflexes at all fully elaborated (viz. by Prochaska), but in what consists the difference between voluntary action and unconscious reflex was first stated definitely by Marshall Hall in 1833." Mr. Keeling also notes (*op. cit.*, p. 260 n.) "how strikingly far" Descartes in his *Passions*, art. 50, anticipated the language of "conditioning."

of evidence regarding the question whether pain is subjective or objective. To be sure, the dog does not report his subjective condition and the child might (although, even then, the report would consist of objective noises); but the dog's silence about introspective matters can scarcely be regarded as a striking modern discovery.

(2) The complaint that in what I may call the dark, pre-conditioned ages ignorance compelled even physiologists to become unscientific regarding the higher nervous centres requires appreciable modification. Certainly common sense does employ introspective-teleological methods, and does attempt, by analogy, to apply similar canons to the behaviour of the higher animals. Certainly, also, if no other methods were available, these would currently be employed. It is not true in fact, however, that persons who used this method necessarily inferred that if we knew everything (or even enormously more than we do) about the nervous system, we should still have to invoke a new, unneural and, as it were, disembodied "mental" series of causes. If we believe ourselves to know from experience that when people want anything very much they commonly try to get it, it does not follow that we deny the very possibility of a physical interpretation. The state of affairs in question would be *compatible* with an intransigent dualism (*i.e.*, with the theory that mind and body are totally and for ever disparate in their nature although capable of entering into a temporary partnership); but it does not *require* that theory. Indeed, dualism was only one of the reigning hypotheses in preconditioned days, and it was not the favourite hypothesis, since either some form of identity-hypothesis or else the double-aspect hypothesis was more usual.

Those who accepted the identity-hypothesis commonly held that mind was a form of body, for they seldom maintained that body was a form of mind. In short, they divined what Mr. Hogben and perhaps Mr. Pavlov profess to be able to see. Those, again, who accepted the double-aspect hypothesis advocated a doctrine of psycho-physical (or, more accurately, of psycho-physiological) parallelism. For them, the two aspects, *ex hypothesi*, were aspects of the same thing, that is to say, of something which, in one set of features, was just a living organism. No doubt if, like Mr. Hogben, we reject all introspective teleological methods, then we do reject psycho-physical parallelism; for, according to that theory, the same thing may be studied (in principle) *either* by an introspective-teleological *or* by a physiological method; and Mr. Hogben spurns the former. The theory, however, did not deny the sufficiency of physiological methods in principle. It even hoped that appropriate methods of this order might be discovered. What it did deny was only that teleological-introspective methods were either meaningless or useless.

(3) Particular attention should be paid to the contention that the discovery of conditioned reflexes supplies convincing proof of the unity of voluntary and of involuntary action.

The argument is (*a*) that voluntary action, in fact as well as in name, must be known introspectively (and not otherwise), must be teleological (if anything is teleological), and must be unscientifically indeterminist (if the human will be "free"); (*b*) that reflex action is opposed to voluntary in all these respects. Therefore, if so-called voluntary action is a conditioned reflex, that is to say, a species of reflex action, the introspective-teleological psychology is instantaneously deflated.

In examining this contention I shall not add anything to what I have already said about determinism, and shall postpone the consideration of conditioned reflexes; but I should like to direct the reader's attention to the rest of the argument.

Clearly, the name "voluntary" was selected for introspective reasons. A "voluntary" action is the sort of action that a normal healthy man can perform instantaneously, or at any rate very promptly, whenever he chooses to do so, and, as we say, just because he chooses to do so. Thus nearly anyone can rise, salute, cry "Heil Hitler!" (and so forth) by merely trying to do it; and we learn by introspective experience what actions are in this way at the behest of what we call our "will."

If we were as ignorant about our bodies as plain men commonly are to-day, and as the ancients necessarily were, we might have to admit that the sum of our knowledge about such matters was simply that a conscious intention was (so far as we could tell) the occasioning cause of such movements. What is more, even if we learned from the behaviour of paralytics, and from surgical evidence regarding lesions in and excisions from the brain, that a certain physiological condition of the nervous system was *also* necessary for effective volition, we should still have to say that, although a conscious intention could not be a *sufficient* condition for successful voluntary action, nevertheless it was *one* of the conditions known to experience, and indeed (in the existing twilight of this department of physiology) the only partial condition that we could specify with certainty and with precision. From this point of view the name "voluntary" meant a great deal more than simply a misleading residue of obsolescent theory.

Per contra, at least two other points should be noticed in this connection.

In the first place, it was never maintained that all movements of the sort we call "voluntary" were necessarily caused by a subjective volition. A "voluntary" movement was simply one that, in certain cases, *might* be subjectively initiated. A man can blink if he chooses;

but he also blinks involuntarily if he encounters a bright light, or a moving branch near his eyes. To utter a word is usually voluntary; but it may occur in sleep without any evidence of volition. Indeed, although we usually think that a "voluntary" action can at least be inhibited by volition (for even a sot, unless he is wholly depraved, can refrain from raising the glass to his lips), we could not insist upon this condition (as is plain from the instance of blinking). It is no new discovery, therefore, that certain "voluntary" movements *might* be made involuntarily.

In the second place, to elaborate what has already been mentioned in passing, it has been known for a very long time that introspective methods by themselves were insufficient in this affair (from which it would not follow that they were either useless or completely unreliable). Paralysed persons make the volition, but the expected movement does not occur. In certain hysterical disorders the patients, let us say, believe that they cannot move a hand (which, according to their ideas, terminates at the wrist), although they *can* move the muscles of the forearm that do in fact cause certain movements of the hand. In practice, therefore, all psychologists and most regius professors of moral philosophy were fully prepared to admit that our introspective ideas about these matters might lead us sadly astray; that for physiological purposes the term "voluntary" should, whatever its origin, be regarded most conveniently in a psychologically neutral way as primarily a name for the skeletal musculature, with special reference to the higher nervous centres; and that, even for psychological purposes, this neutral extension of the term might frequently be appropriate.

A few psychologists and philosophers, it is true, maintained that our introspectively voluntary movements were *intelligible* in a sense in which other movements were not. If, they said, we wanted to do this or that, *and did it*, then (and not otherwise) we could understand *why* we did it. In other instances the movements seemed simply to happen, although, *après coup*, we might sometimes be able to give an extrinsic reason for the event, either "mechanical" or adaptive (as, *e.g.*, the protection of the eye by a blinking movement). The general opinion, however (and, as I apprehend, the correct opinion), was that this supposed "intelligibility" was itself an inference from repeated experience. We discover by experience what parts of our frame can be moved by merely trying to move them, and what parts cannot; and we should not pretend to ourselves that we ever know *why* the movable parts move when we try to move them and the others don't. Most of us can waggle our toes, and very few can wiggle their ears; but what sort of self-evident reason could anyone pretend to allege for the universality of voluntary toe-waggling and for the rarity of voluntary ear-wiggling?

(4) The substance of the new contentions, however, is positive rather than negative. It is not so much a question of what consciousness, or some factor of which consciousness is an aspect, cannot do (although that is a part of the argument), as an alleged demonstration of the competence of reflexes for all "mental" functions previously regarded as *not* reflexes. When, for instance, Mr. Hogben speaks about "mechanizing consciousness," he means that the functions previously ascribed to "consciousness" may now be ascribed to reflex action, and that reflex action is mechanical. Has this claim been substantiated?

Mr. Hogben admits (*L.*, 36) that the term "reflex" may be used in various senses, but he lays emphasis, for the sake of his argument, on the sense of "reflex" in which it is a completely uniform localized response, through the nervous system, to (the same) local agent; and he illustrates it by the way in which a "pithed" frog, with its cerebrum surgically excised, withdraws its leg when its toes touch water heated to about 40° C.

It is only in this sense that a reflex is, properly speaking, "mechanical," or as we say "automatic"; and we all know, even from looking at the matter from an introspective standpoint, that we do have these reflexes. When we are aware of such a reflex (as of the knee-jerk when a doctor tests us) we regard it as something "automatic" within us, something that explodes like a pistol when the trigger is pulled, and is essentially the same response whether or not it is a sensation-reflex, that is to say, whether or not we are conscious of it when it occurs. A sneeze, for example, is a reflex of which we are usually conscious. Indeed, we may even have a limited voluntary control over our sternutations. In the main, however, sneezes are in- or at least non-voluntary. Their occurrence is one of the staple devices of novelists whose plot requires that some eavesdropper should be detected.

Seen from this angle, Pavlov's choice of salivation as an instance of reflex action was skilfully chosen. We believe ourselves, indeed, to know from experience that ideas may stimulate the flow of saliva as well as actual smells or tastes. Our mouths may water from the reading of cookery books; and it is conceivable that we might learn to control this function almost as well as most people can control their tears. Since, however, we have not been made to dribble visibly like Pavlov's dogs, none of us has seen the advantage of learning to control this private manifestation of greed, although we have all seen the advantage of restraining our tears. Therefore we commonly consider salivation as an obvious instance of a "mechanical" reflex, and do not even speculate whether an open-mouthed dog is precisely parallel in this particular to a habitually close-lipped man.

Common sense, then, and also common psychology, is quite familiar

with the occurrence of "reflex" or, in the old general phrase, "automatic" actions, whether they occur singly, as a sneeze usually does, or occur in a chain like masticating, swallowing, etc. Moreover, common sense and common psychology were perfectly familiar with what used to be called "secondarily automatic" action, that is to say, with action that *became* "automatic," although it had not always been so. For example, a human being that has learned to walk may walk thereafter quite inattentively, as J. S. Mill is said to have done in the horse traffic of London when all his conscious thoughts were employed about his *Logic*. Similarly, a man who has learned to stand may become capable of sleeping on his feet.

The part of this phenomenon that chiefly interested old-fashioned psychologists was the circumstance that the attentive consciousness that (in certain cases) had once been necessary might become wholly or almost wholly otiose. When we had to learn, say, to dress ourselves in the morning, we had to attend rather carefully to many of our movements and had to *try* to execute the difficult ones. Having learned, we became able to think of other things while we were dressing, and even, like W. S. Landor, might find that our happiest thoughts and phrases were likely to occur to us at such a time (unless, I suppose, a stud proved refractory or a button gave way). It should be noticed, however, that few, if any, ever said or thought that *all* secondarily automatic action had originally been "conscious." For it was the same sort of phenomenon as learning to breathe easily at an unusual altitude where there need be no conscious adaptation.

Facts of this kind were frequently consistent, however, with the presence and presumed operation of consciousness, although they might also be consistent with its absence. The essential new question is whether the old-fashioned explanation of the species of secondary automatism that was supposed to be derived *via* previous conscious attention should now be held to come by a different route. Can we learn *this*, as well as many other important things, from Pavlov's skilful and beautiful experiments?

To speak temperately, I cannot see that the experiments *constrain* anyone to draw this conclusion. As we have already seen, the mere fact that a dog which, when untrained, salivates when presented with food, may be trained to salivate at the sound of a dinner gong, is, in itself, no proof that the dog does not mentally and consciously associate gong with dinner when this trained reaction occurs. Pavlov records the beginning and the end of the process. For all he shows to the contrary, the intervening process (in these instances) *might* require consciousness; and he admits (*C.*, 322) that surgically brainless dogs cannot be trained in this way (or only to an inappreciable extent). In short, this particular question concerns what

Pavlov expressly refuses to discuss, viz. "intricate problems of the higher psychic activities in man," or at least of those "higher" activities that may be neural but are commonly called "psychic."

Mr. Hogben's argument, however, is precisely that Pavlov has shown that there need be nothing except reflex action in a host of cases (indeed, ultimately in all cases) in which it was formerly supposed that factors quite different from those involved in reflex action had to be operative. The dog, we all supposed, remembered, expected, or imagined his dinner when he heard the gong. *Therefore* (we used to infer, from experience if not from insight) his mouth watered. What has now been shown, according to Mr. Hogben, is that the whole process, at every stage of it, was reflex or automatic.

If so, the argument is stringent only if the term reflex is carefully defined and invariably employed in the same sense. If the term were used quite vaguely and generally, the conclusion would be equally vague. In particular, if the term were used in a sense so wide as (*a*) *not* to preclude, or even (*b*) as to *include*, introspective-teleological implications, the argument, by implication, would recoil upon Mr. Hogben's mechanical head. And I propose to show that Pavlov's argument does both these things. Indeed, I shall contend that instead of mechanizing or extruding *consciousness*, Pavlov has been forced to loosen the definition of *reflex* in such a way that the narrow, "mechanical," or "automatic" implications of a "reflex" disappear and are replaced, in an undeniable way, by what Mr. Hogben would call teleological or introspective characteristics.

(*a*) The first point can be readily demonstrated. Pavlov draws no effective distinction between a "reflex" and a general "reaction" (*e.g.*, *C.*, 12); and certain at least of the reactions that he calls "reflexes" are of so general a description, so varied in their manner and mannerisms, and excitable by such a multitude of different causes, as completely to contradict the sense of "reflex" in which it is fixed, "mechanical" or "automatic." Thus (*C.*, 12, and elsewhere) he speaks of *the* "investigatory reflex" (*C.*, 11, and elsewhere), of a *special* "freedom reflex" (*C.*, 17), of *the* "defence reflex," and even (*C.*, 31) of "the reflex of self-preservation, of existence or non-existence, life or death." It is obvious that such language is quite hopelessly vague, and that *such* "reflexes" are not at all comparable to the precise and invariable piece of routine according to which the "pithed" frog withdraws his foot from water heated to 40° C. What could *the* "life or death reflex" be except *all* the varied actions that assist survival—avoiding poisons and traps, overcoming a dangerous adversary in fight, eating when famished, etc.? How could this multitude be *a* reflex? And how does Pavlov count his reflexes when he *also* speaks of *the* reflex of "passive self-protection" (*C.*, 410)?

Similarly, *the* investigatory reflex is said to include sniffing, gazing,

pricking up of the ears, etc., in short, any one of the very numerous reactions appropriate to what old-fashioned people called curiosity; "*the* freedom reflex" would be exercised (in a most varied way) where any sort of physical constraint was exercised by stone walls, iron bars, gyves, stifling air, or any other similar impediment. There is here no question of *a* "reflex" in the narrower sense into which "mechanical" implications are naturally read, that is to say, no question of a single uniform response to a single uniform stimulus; and the language employed implies an amazing system of book-keeping according to which overcharges are possible *ad lib*, because no precautions are taken against counting the same "reflex" several times over. Thus, blinking the eyes, a reflex in the narrower sense, is *this* reflex and *also* (it would seem) an instance of *the* eye-preserving "reflex," and *also* of *the* "life-preserving reflex" (if the threatened injury be serious). Fighting, again, would be ascribed both to *the* "defence" and to *the* "self-preservation" reflex, and each particular device in the fight, such as gripping the enemy's ear, would be ascribed to the ear-gripping, the defence, and the life-preserving reflex. Vagueness could scarcely go farther.

(*b*) In his vehement desire to avoid "fantastic speculations as to the existence of any possible subjective state in the animal which may be conjectured on analogy with ourselves" (*C.*, 16), Pavlov argues that the function of "signalling" is purely "reflex" (*C.*, 24), and even says that *all* his conditioned reflexes are instances of "the" signalling reflex (*ibid.*). Such language, however, is patently subjective or mentalistic, as is his reference (*C.*, 244) to "an efficient and watchful signalman." It contains, quite precisely, the very introspective and teleological implications that Mr. Hogben deplores. No doubt we speak of "automatic" signals (such as fog-signals on a railway). Nevertheless, a signal implies a mind that can read it and also a mind that gave it. There would be no signalling in a mindless universe, although there might be green light, and yellow, and red. The most we could say of a "mindless signal" would be that it *would* be a signal *could* anyone have the wit to interpret it. Pavlov's language about signalling (and it describes a central, not an incidental part of his theory) is to the full as metaphorical as the common statement that "the clouds promise rain." It is we who infer the rain. The clouds do not promise at all. And the mechanistic philosopher Hobbes, when he made this comment, had a story to tell that should have been noticed by these modern mechanizers.

"Signalling," again, is not merely "introspective." It is also "teleological"; and Pavlov stresses the point when he repeatedly explains that signalling is biologically advantageous (*C.*, 110, 152, 312, 321)—a conception that Mr. Hogben, in what (I think) is the ablest part of his very able book, stigmatizes as non-explanatory,

unscientific, and antiquated. If adaptation to the environment is not teleological, nothing is teleological. Therefore if mechanism and teleology be opposed, Pavlov is not a mechanist.

In short, Pavlov's argument, instead of mechanizing all consciousness, de-mechanizes many "reflexes"; and I shall conclude this discussion by mentioning some further points concerning his account of "reflexes" and of the relation between conditioned and unconditioned ones.

(α) If by a "reflex" is meant *the same* "automatic" response to *the same* set of causes, it is evident that "conditioned" and "unconditioned" reflexes cannot *both* be "reflexes," since, *ex hypothesi*, we obtain, in their case, the *same* response to *different* stimuli. No doubt, in a telephone system, different people, at different times, may ring up the same number; and the nervous system can be compared to an elaborate switchboard. In that case, however, the onus of explanation is laid upon what Pavlov does not discuss, viz. the nervous (or other) events that intervene between stimulus and response.

(β) If, like Mr. Hogben, or like Pavlov (*C.*, 105), your explanation is based upon the *regularity* of the response, then it is true that unconditioned and conditioned reflexes (when the latter have been formed) are both quite regular. According to the same argument, however, there is a period of irregularity (when the conditioned reflex is in process of formation). Such irregular behaviour, by definition, would *not* be "reflex"; and therefore there would be *some* behaviour that was not reflex.

(γ) In general the terms "conditioned" and "unconditioned" reflex would have been unfortunately chosen, even if there had been no strong objection to the chameleon-like properties of the word "reflex" in these arguments. Obviously Pavlov does not mean that an unconditioned reflex has *no* conditions. He means only that it is "inborn" or "natural"—and neither of these adjectives can be regarded as very precise. Indeed, Pavlov himself is very guarded in his praise of his terminology (*C.*, 25, cf. 26). He admits that other terms of "arguably equal merit" might just as well have been used, and he even says that one of the uses of the word "conditioned" (*C.*, 68) was "only justified by historical considerations." A "conditioned reflex," indeed, is simply one that has a *special* and, in the experiments, an *artificial* condition.

Moreover, it may be doubted whether the new term "conditioned reflex" is not inferior to the old term "secondarily automatic," and, although names seldom matter very much, it seems just worth while to call attention to one respect in which the older terminology was preferable to the new, because it was less question-begging. When we speak of "secondary automatism" we speak of a process that

has become "automatic," although it was not always so, and we do not commit ourselves to any special theory of the causes which preceded the newly acquired automatism. We certainly do not infer (as Mr. Hogben, it would seem, would have us infer from the mere word "reflex") that the new, induced automatism was the product of older automatisms and of nothing that was not automatic.

The best descriptions are those that do not say more than they mean.

GREAT THINKERS

(III) ARISTOTLE

I

Professor J. A. SMITH

In the history of human thought the name of Aristotle must be written in capital letters. Of few of the Great Thinkers of history is it so true that he was one of what William James called "the folio editions of mankind." In speaking of him, whether in praise or dispraise, it has been found almost impossible to avoid superlatives. The later ancients ranked the disciple level with his master Plato as occupying the twin summits of philosophical attainment. Since then they have divided the allegiance of the thinkers of the Western World. No doubt it is a rather wild judgment of Coleridge's that every man is born either a natural Platonist or a natural Aristotelian, but it is scarcely an exaggeration to say that no man has attained any width of knowledge or depth of reflection who is not driven to recognize, and often to express, a preference for the one over the other. The scales of their influences have, in the course of the more than two millenia that have elapsed since their death, gone up and down. For long it looked as if the verdict of history were to be decisively in favour of Plato, and this is reflected in the habitual epithets applied to the one and the other: Plato was "the divine Plato"; Aristotle was "the miraculous or marvellous Aristotle." Plato was divinized, if not deified; Aristotle was reckoned the most exalted of human beings. When, after some 1,500 years, the centre of European thought passed from the East to the West of Europe, and the Platonic influence waned, the estimate of Aristotle was more warmly expressed.

To the great Arab commentator Averroes (Spain, 1126–1198), Aristotle was "the rule and standard which Nature had invented to show forth the ultimate perfection of humanity"; his intellect was "the end and consummation of the intellect of Man," and "his teaching" consequently "the height of truth." The chief Christian systematist of philosophy, St. Thomas Aquinas (1227–1274) carried out a conscious and deliberate reconstruction of philosophy and theology in accordance with the principles and methods of Aristotelianism which made a deep and lasting impression upon his contemporaries and the later Scholastics. Even Roger Bacon quotes with approval the words of Averroes: to him Aristotle is not only "the most learned of philosophers," he is "*the* philosopher." Dante

reflects this judgment in his characterization of Aristotle as "*il maestro di color chi sanno*" ("the master or teacher of the wise," the philosophers' philosopher). No doubt during the Middle Ages the ecclesiastical authorities had frequently expressed disapproval of what they regarded as excessive laudation of Aristotle, and various thinkers from different points of view had protested against it, but upon the whole the influence of Aristotle was dominant over that of Plato, which reached them only indirectly through St. Augustine and certain Neo-Platonic sources. St. Thomas, *e.g.*, was well aware that at a critical point in the history of philosophy Aristotle had "proceeded by another road" than his master's, and to him (as to Dante) Plato is a reverend but secondary figure in "the philosophical family." He was a declared opponent of Platonism in the form in which he knew it.

There is no real revolt against the dominance of Aristotle till the rebirth of Platonism in Italy (fifteenth century), but the whole spirit of the Renaissance was hostile to Aristotle. But as the Platonism which the Humanists took under their protection was a perversion of that of Plato, the Aristotelianism against which they inveighed was a distortion of that of Aristotle. The more sober and sane judgment of modern times has abandoned the exaltation of either at the expense of the other, and, while it is still a favourite commonplace to contrast them, it is no longer the practice to claim for either the sole right to the philosophic throne.

We may, therefore, be content, without any derogation from Plato, to recognize the enormous influence which Aristotle exercised, and still exercises, in the shaping of men's minds.

Since Aristotle's death some twenty-two centuries—more than two millenia—have passed. His life (384 to 322 B.C., sixty-two years) falls in a period of the history of Greece concerning which our information is not as full as could be wished, and our ancient authorities for it are not of the first rank of historians. The early part of the period was occupied with the struggle between Sparta and Thebes, which ended in the defeat of Sparta at Leuctra; the middle part by that between Macedon and Athens, which ended with the defeat of the latter at Chaeronea; and the last part by the conquests of Alexander (who died in 324). Within it fell successively the careers of Agesilaus, Epaminondas, Pelopidas, Demosthenes, Aeschines, Alexander. Von Wilamowitz has attempted to furnish a panoramic picture of this background of Aristotle's life. Of that life itself we have no full or trustworthy ancient account: the professed biographies which we possess are of little worth, and we must here confine ourselves to an outline.

Aristotle was born about 384 in Stagira (or Stagirus), a town on the peninsula called the Thracian Chersonese. His father,

Nicomachus, came of a stock of hereditary physicians, and had been court physician to the king of the neighbouring kingdom of Macedonia. Aristotle's parents both died while he was quite young, and his education was guided by his relative and guardian Proxenus of Atarneus in Mysia (North-West Asia Minor; it included the Troad). In his eighteenth year he went to Athens to attend the Academy which Plato had founded and controlled. There Aristotle remained, first as a scholar, and then as a teacher, for twenty years (until the death of Plato in 348). We may wholly disregard the gossip that has reached us of differences and even quarrels with his master, of whom he never speaks but with friendship and reverence. During this period he seems to have made no claim to independence of thought, but acknowledged himself an orthodox or faithful Platonist.

In 348, with Xenocrates, he quitted Athens and settled at Assos in the Troad, where he joined two other Platonists. There also he found a friend and patron in the prince of Atarneus, Hermias. At Assos these Platonists founded and carried on a sort of branch of the Athenian Academy. There Aristotle, who had married a niece of Hermias, stayed some three years, and then changed his residence to Mytilene in Lesbos (345). This Assos (or Assos-Mytilene) period was a very important one in his mental development: in it (at the beginning of it he was about thirty-seven) he seems to have increasingly realized certain fundamental differences from Plato and the more orthodox (or conservative) Platonists, and begun to feel and assert his own independence and originality—singularly late for so powerful a mind. When he was at Mytilene there reached him (343) an invitation to become tutor to the young Crown Prince of Macedonia, Alexander (then thirteen years old); he accepted it and moved to the court at Pella. His instruction of Alexander does not seem to have amounted to much: it was probably fitful and subject to many interruptions, and it came to an end in 336, when Alexander succeeded to the throne. It is possible that Aristotle had already retired to his native Stagira, but in 335 he returned to Athens. There he did not rejoin the Academy, but founded a similar institution called the Lyceum (it was also called "the Walks," *Peripatos*, and the members of the school were usually called from it "the Peripatetics"). As neither Aristotle nor his successor in the headship of the School was an Athenian citizen, they could not legally acquire the site or own the building on it, and its character required a rather elaborate provision of such. Superficially (and in the eyes of the law) the institution had the character of a religious community. Less superficially, it was an institution for the higher education of Greek youths from all parts of the Greek world. But also, like the Academy, only much more so, it was a company of advanced students, occupied in research, in the collection and

arrangement of scientific observations and historic documents, and generally in the extension of all sorts and branches of knowledge. Over their co-operative labours Aristotle himself presided, inspiring, organizing, and guiding them, training the many highly competent colleagues who collaborated with him. With their aid he accomplished results which in their range and variety are no less than astounding. The Lyceum realized almost all the ideals that have ever been entertained of the work of a university. One important result of Aristotle's devotion to this work was that his properly literary productivity (which had earlier been considerable) ceased. The works he composed in this period—and they are the only works of his which have reached us in anything but fragments—are treatises intended to be read not by a general public, but by students, learners, and teachers in the Lyceum itself. It would be no exaggeration to say that they are intended to be "read," but we must remember that at that time (and for centuries after) "read" meant "read aloud to listeners." We must not think of them as in any way "published" or meant for "publication." In this respect the works of Aristotle that remain to us are wholly different from those that we have of Plato, or the fragmentary earlier works of Aristotle himself. Of what Plato *taught* in the Academy we have scarcely any direct evidence, while we have very full and detailed evidence of what Aristotle taught in the Lyceum. It may be added that from the death of Theophrastus in 288 until about 86 B.C. all this body of evidence for the doctrines of Aristotle passed out of reach or sight even of the members of the Lyceum. It was unknown, *e.g.*, to Cicero. It was again lost to the Western world till the thirteenth century, when its rediscovery led to a remarkable and enduring restudy and revival of these doctrines. That revival was an endeavour to recover the whole treasury of ancient wisdom, and frankly acknowledging the enormous value of the results of pre-Christian thinking to appropriate that all but lost heritage, and build it into a new and greater structure of Christian philosophy. It was an attempt viewed at the time with much suspicion and alarm, but it won its way to wider and wider acceptance, and in the main it is still the officially endorsed and recommended philosophy of the Catholic Church, or at least of the Roman Church. Of that philosophy it may be said that it is avowedly Aristotelianism Christianized, completed by doctrines of Christian or revealed origin, but in that completion not substantially altered, the union between the two being, or being regarded as being, a co-operation of natural allies. From an early period there was another current on which the alliance of specially Christian thought was with what was, or was believed to be, Platonism. But the historian of philosophy must recognize that this latter current was the more fitfully

flowing and less dominant of the two, and so, that the Aristotelian was the central one. If for no other reason than this the philosophy of Aristotle, as we find it in, or can extract it from, his works which remain to us, is of prime importance.

The literature which contains the record of the innumerable attempts so to extract it and to restate it in a form adapted to the needs of later students is of enormous extent. Some idea may be gained of it from (say) the separately published list (1884) of the works in the British Museum catalogued under the heading "Aristotle," which fills 110 large folio pages, or from Mr. M. Schwob's *Bibliographie d' Aristote* (1896), which enumerates nearly four thousand separate works. (It must be remembered that while some of the entries are of pamphlets, very many consist of several folio volumes.) From the death of Aristotle (or at least from the beginning of the Christian era) there has flowed a swelling flood of editions, paraphrases, commentaries, restatements and reinterpretations of Aristotle, and it still flows abundantly.

Before entering upon my main task—that of giving to my readers some idea of this philosophy—I must complete what I had broken off—the record of its author's life. The sudden death of Alexander in 323 produced a crisis in Aristotle's life, and exposed him to personal danger. Rather than, as he is reported to have said, give occasion to the Athenians to sin a second time against philosophy, he withdrew from Athens, and retired to Chalcis in Euboea, where about a year later he was carried off by a fatal illness. We possess the text of his last will, which is mainly occupied with certain arrangements about his family. (He had perhaps earlier nominated Theophrastus to succeed him as head of the School.) In his will he makes provision for his "companion" Herpyllis, for the guardianship of his son Nicomachus and a daughter, ordains the enfranchisement of some of his slaves, and gives directions for the commemoration of some deceased members of his family, in a way which leaves a pleasant impression of his personality. We may safely neglect all the gossiping anecdotes to his discredit which have filtered down to us. Professed portraits of him are not uncommon among statues remaining to us, but they are too late to be of much value as evidence. A literary tradition, to which we may perhaps attach more weight, tells us that (like Alcibiades) he pronounced *r* as *l*, that he had thin legs and small eyes, that he wore striking garments and rings and had his hair cut short. There is no harm in our carrying with us this picture of the man, or any other that we may frame following in the wake of the ancient statue-portraits of him, or even such idealized representations of him as Raphael's in "The School of Athens." No harm, but not much good either.

In passing from such externalities to a deeper view of the personality of Aristotle we may use as a kind of bridge a passage from Goethe, where he, contrasting Aristotle with Plato, thus characterizes him: "Aristotle's attitude to the world is that of a great master-builder. Here is his station; here he has to work and create. He studies the ground, but only until he has found a solid foundation. What lies beneath, from the surface to the centre of the earth, is indifferent to him. He draws around the site of his proposed edifice a gigantic circle, collects materials from all quarters, arranges them, piles them up, and so rises aloft like a pyramid, while Plato soars heavenward like an obelisk or a pointed flame."

The impression thus conveyed to us by so highly competent an observer is that Aristotle's mind was one of extraordinary range or sweep. The description seems indeed to qualify this praise with hints of certain limitations in width and depth of view, but upon the whole it attributes to Aristotle a design to furnish himself with a prospect over the whole field of human experience, excluding nothing within it from his view as trivial, common, or unclean. The impression is justified, and we may add to it that he pursues his exploration of the field into its minute details. Of the results of his labours thus to extend his acquaintance with the facts of experience we still possess a large specimen in his masterly survey of the members of the animal kingdom (the *History of Animals*), and fragments of a similar survey of the political constitutions of the Greek world of his day. Certainly Aristotle spared no pains to enlarge his acquaintance with the facts of which he sought the theory, and neglected no source of information about them. But further, he was not content merely to describe in all its extent and variety the spectacle he beheld; he attempted to reduce it to order and good arrangement. In regard to the animal kingdom, he laid the foundations of a zoological classification which, according to Cuvier, left little to be done by the centuries that followed. He grouped animals in species, species in genera, genera in families or orders. In a word, he was one of the first and one of the greatest of systematists. What he thus accomplished has won the wondering praise of successive generations of zoologists. To quote but one only, Charles Darwin says that his "two gods," Linnaeus and Cuvier, were "mere schoolboys to old Aristotle." He shows and employs the same gifts in other fields, and it might appear that his peculiar genius lay in the combination in unprecedented and not easily paralleled measure of the two powers of extensive and minute observation and of the reduction to order of the data so collected. He stands before the eyes of his successors as a prototype of the savant, a pioneer in the work which in modern times men of science so fruitfully pursue.

I do not question his title to their wonder and praise, but if

these are taken to imply that his methods or his ends were the same as theirs the implication can only be admitted subject to the gravest qualifications. Between his and their science there is a deep and wide gulf. It is significant that his careful collection of the facts of the animal kingdom comes not at the beginning but at the end of his biological works: the collection is not made in order to procure the first principles of his biology, nor, when he has made it, are its data used to confirm or "verify" them. Francis Bacon with great sagacity detected a fundamental difference between all ancient and all modern science. In a sense, the courses of both begin at the same point, *i.e.*, with the particular data of the senses, but the ancient man of science proceeded from them at once to the highest and widest generalizations, and then from them deduced by a pure exercise of reason ever lower and narrower truths which in no way stood in need of check or confirmation by the data of sense; the modern man of science starts from a far more extensive collection of data, ascertained not only by careful observation but also by planned experimentation, proceeds from them by gradual induction to more and more wide generalizations, returning at every step to these data in order to control and confirm or correct the results of his procedure. Thus to the ancient philosopher one wide look over the field which he proposed to study was enough to supply him once for all with the main principles of the interpretation of all the facts lying within it, and the rest of his scientific work consisted in elaborating into an articulated system the consequences that necessarily followed from them: if the main principles had been properly got and the conclusions from them duly deduced, the latter were certain knowledge or science, and neither permitted correction nor required confirmation from fresh data of sense-observation. Between ancient and modern science there is thus, as Bacon says, an immense or immeasurable difference, and the difference comes out in the difference of their attitude to the data of sense, ancient science treating them slightingly and cursorily, modern science consulting and deferring to them at every step in its advance. Their methods of procedure are in the main the reverse or inverse of one another, "deductive" and "inductive" respectively: the one proceeds by leaps and bounds, the other crawls step by step. Hence their respective results are wellnigh incomparable, and, where they coincide, do so almost by accident. If this be so, it might seem that to bring back to memory and view the results of ancient "scientific" activity is merely to satisfy an antiquarian curiosity. Perhaps to say so would be going too far, for, undoubtedly superior as those of modern science are, it may be said that there are results of value which its preferred method could not have secured, and many of those which were secured by the other or ancient method still are

retained in the apparatus of the better modern scientific mind. Its mathematics, *e.g.*, till quite recently stood unaltered, and even from its physics we may still learn. With that, with Aristotle's version of it, I will begin my account of his philosophy.

Many of his extant treatises are devoted to the exposition of his doctrine of Physics—his science or philosophy of Nature. He includes within the scope of that science the whole sum of what is "natural," all that, as we should now say, falls within the field of any of "the natural sciences," not only of our "physics," but of chemistry, botany, zoology, etc. These "natural" things were all seated or contained within a single vast sphere, surrounding the earth as centre, which he called "the Heavens," but which (with its contents) I shall call "the [physical] Cosmos." This Cosmos had always existed and would always exist: it had not been created or generated and it was wholly indestructible. Within it he distinguished two regions which he—with momentous consequences—regarded as being, though both "natural," almost wholly different in character. The upper or outer region extended from the outermost circumference downwards to the lower or concave side of "the sphere of the Moon," so that we may call the lower or inner region "the sublunar region." Now in both of these regions of Nature or the natural there are bodies—in fact, they are filled with bodies. These bodies undergo changes, but, while the bodies in both, and therefore all bodies, change from place to place, that is the only change which bodies in the upper region undergo, while the bodies in the lower region, besides changing their place, also alter their qualities (including their shapes) and their sizes, and lastly change their very substance, so that new substances may be said to come into and pass away out of existence. Another contrast between the two regions is that in the upper the changes of the bodies are uniform, or obey uniform laws, while the changes of the bodies (or those of them which take place there only) are not strictly uniform, but only regular, *i.e.*, show occasional exceptions or deviations from uniformity. This contrast may be expressed also as one between necessity and contingency, and this has the consequence that, while our knowledge of the uniformities of the upper may be certain, that of the regularities of the lower cannot in many cases rise above being probable. Nevertheless, we must for a time ignore the differences between the two regions.

In the first section of his physical works (viz. his *Lectures on Physics*) he has in view the common or general facts of both regions, and therefore in the foreground are those simpler facts which are found apart from others in the upper region. What occupies the whole of the Cosmos are bodies extended in tri-

dimensional space and enduring through time, having a nature or natures, possessing qualities (including shapes) and quantities, and exercising operations at least in the form of passing from one place to another (Locomotion or Motion proper). As bodies (1) they fill each its private place, and all together all the space or room there is, and (2) they are each and all endlessly divisible just as are the places (or the place) they occupy. Thus there is nowhere in the Cosmos any empty place (or Void), and, again, there are no Atoms or indivisible parts of any body. There are differences of *kind* among bodies, *i.e.*, differences more deep-seated and more permanent than differences of quality or quantity or operation: some are even eternal and indestructible. But for all differences between them, one thing is true of all of them: they all change, and in particular all at least change their places, *i.e.*, move. Or rather, more precisely, all are "moved," for not all (or perhaps any) originate or initiate movement, so that, in speaking of their "operations," we must understand the word not "actively" but rather "passively." Thus the Cosmos is the theatre, so to speak, of a vast and various and complicated passivity, mutability, or "mobility." The existence of anything and everything in it is such passivity or mobility, not as a mere possibility but as an actuality, an actual "being moved," such as is evident to us when we use our senses. To be thus actually moved is the universal character of all physical or natural beings whatsoever, and that presupposes in them an antecedent capacity to be moved. It is all-important for the understanding of Aristotle's Physics that we should firmly grasp this doctrine of all the movements which bodies visibly or observably execute, viz. that they are actual but not active movements, that they are actualizations of what our forefathers called "passive powers." I do not pause here to ask how Aristotle reconciles his doctrine that all bodies actually move (= are moved) from place to place in Space when in Space there are no empty places: he does openly face the problem, and propounds a confident solution of it (the same solution as, *e.g.*, that of Descartes).

The primary sort of Movement (found everywhere and always in the Cosmos) is Change of Place or, briefly, Displacement. No kind of body ever stays permanently in the same place; it is always in movement from one place to another, and always its passage takes or occupies some time.

Aristotle fully recognizes that the motion of Movement (most clearly, but not only, in the case of Displacement) involves or presupposes the notions of Space (or rather Place) and Time; and he expends the utmost pains in endeavours to clear up both of these notions and to recombine them, so improved, into a better, more "scientific" conception of Movement. Attempts to define such

elementary and fundamental notions of Physics are not now so often made by modern physicists, but it is surely clear that it is necessary to seek for them, and to be dissatisfied when they are not found and made explicit. Even in such modern treatises as, say, Clerk-Maxwell's *Matter and Motion* I find articles entitled "XX. Definition of Displacement," "XV. On the Idea of Space," "XVII. On the Idea of Time." In both Aristotle and Clerk-Maxwell the aim (and the result) is to construct and supply what may be called a systematic science of Kinematics. But between the two Kinematics there are obvious differences, as, *e.g.*, that the modern one considers Movement "in its purely geometrical aspect" and the ancient one is not specially "geometrical." But the difference lies deeper than that: surprisingly enough, the former is "concrete," while the latter is "abstract." Aristotle believes—and all ancient Physics with him—that in better defining such notions he is at the same time coming to a better knowledge of the real facts of the physical Cosmos, and *imprimis* of the facts hidden from our senses in the upper region. The science he is developing is to him indubitably a real or realistic one, a system of ascertained and assured *truths*: its results are certain or proved pieces of knowledge of the real structure and happenings of and in the real Cosmos. By this way—and, according to him, by this way alone—we learn beyond doubt what these veritably *are*, and he gives us his account of them with a categorical dogmatism which we can now only characterize as uncritical or naïve. Unfortunately for him (and for ancient science as a whole), his results are hopelessly mistaken or, where not so, right only by a sort of accident. Towards the end of his life he had reached the conclusion that the supralunar region consisted of a "nest" or series of concentric shells (fifty-five in number), each with a proper, uniform revolution of its own, and many of them carrying round with it an infixed "heavenly body or bodies" (sun, moon, planet, stars). Of the working of this complicated *Mécanique Céleste* he is prepared to supply a kinetics or mechanics or dynamics, and in the light of these to "explain" all its appearances to our senses. To him, I repeat, this is no mere "hypothesis," it is well ascertained, and so certain, fact. But no modern astronomer would or could accept it as such, and it may safely be dismissed from our science. It can no longer be taken as *true*; it is dead, and nothing can bring it to life again.

Let us turn our backs upon it, and ask whether a more favourable verdict can be passed upon his complementary account of the lower or "sublunar" region, viz. that bounded above by the concave side of the lunar sphere and below by the centre of our Earth. This region also is filled—packed full—by bodies of many sorts, with

many qualities, of many shapes and sizes, and operating in many ways. These, too, move (are moved) from place to place within it, but here their movements are rectilinear, not circular, or rather a mixture of both. Nor are they uniform, but the opposite, or, again, rather a mixture of both, which we may call by distinction "regular," *i.e.*, they admit occasional departures from uniformity, and so there are occurrences here due to Chance or Luck. The characteristic "forms" of the local movements here are along radial paths from the centre to the circumference or *vice versa*, and they are executed in times that are not the same for different distances. Still, the most important of them are regular: the bodies concerned in them *normally* move perpetually to and fro along these rectilinear paths from centre to circumference and *vice versa*. Such are their "proper" movements, which, however, are liable to interfere with one another and also to be overborne and permanently diverted by influences coming from the upper region. Their *actual* movements are, therefore, often very complex, but they can always be resolved into their components, viz. their proper or natural movements, their superposed or induced movements, and their impressed or enforced movements.

The first component is due to their particular "natures," and varies with the sort of body that moves or is moved. It is, therefore, important to discover and state what *sorts* of "natures" bodies in these regions have. But before we attempt to give Aristotle's doctrine about the *sorts* of bodies, we must recall his doctrine about the sorts of movement there are in this lower region, which there are not to be found in the higher. In the higher there were no changes except changes from place to place; in the lower there are, in addition to these, (1) changes from one quality to another; (2) changes from one size to another—the same body perpetually (though with differences of rate) changes its qualities and also perpetually changes its magnitude. But further, it also undergoes a more radical kind of change, (3) a body of one *sort* or "nature" becomes a body of another *sort*, and this may be called the passing out of existence (the *corruption*) of the first, and the coming into existence (the *generation*) of the other. The conception of this change is very important in Aristotle's physical theory. It is not that the first body is annihilated and the second created; it is a process of transformation, in which a body of one form or nature becomes a body of another. In the change *something* physical persists unchanged, and is in both the same (though what that *something is* cannot be expressed in words); it is what we call in each its [ultimate] "matter." In the other two changes both the matter and its form remain unchanged: no mere change of quality or of quantity alters the *sort* or nature of the body that so changes. For all that, no body of a

natural kind A can become a body of a kind B, unless it first has changed its qualities or its size or both, nor *that* unless it has still earlier changed its place.

Let us now return to the question, What sorts or kinds of bodies are there in this lower region? To this Aristotle gives with confidence an elaborate and exhaustive answer.

He begins with "the simplest" (he says "*the* simple") bodies, and of these he says that there are four—four and four only. These he also calls "Elements," and he names them Fire, Air, Water, and Earth. Out of them are composed all the other complex bodies that there are. We must not be misled by their names; they are not "ordinary" Fire, Air, etc. Each of the names is a label signifying a body of a determinate kind, which kind (or nature) Aristotle precisely defines as the combination of two fundamental physical qualities or properties (not of two kinds of still simpler *bodies*, each with *one* of these qualities). Any body of one of these *kinds* may be of any size; there is no smallest body, no indivisible atom. Each element has a natural or proper movement: it moves of its own nature or accord up or down along a path from the centre to the circumference and *vice versa*, and each has a place on that line where it is at rest. As there are four elements, there are four movements and four terminals or resting places, *towards* which its natural movement is. Fire moves up to and into a sphere next to that of the moon. Earth down to one surrounding the centre of our globe. Water and Air to spheres intermediate between these (Water to that just above the surface of the Earth, Air to that next above, below that of Fire). Each of the four, unless it is prevented, moves to its natural place. But, stable as are their several natures, they are subject to changes other than those of place, and, in particular, they are subject to, and are perpetually undergoing, the most radical of changes—that of kind. One kind of element can and does change into another kind, and in doing so it changes its quality and its volume; that is to say, a body of one elementary kind can become a body of another (indeed, of *any* other of the four). Aristotle holds and teaches that such transformation or transmutation of one element into another, of each element into any one of the others, is a regular, normal, perpetual occurrence everywhere and always in this lower region. This fact unites together all the events in Nature, for each such change in a body carries with it a similar change in another body or bodies: none does, or could, occur in isolation or apart from others. Each determines, and is determined, by another of the same sort, and the whole sublunar region is in these changes a system of reciprocally related events. In this doctrine, strange as may be its guise, we can recognize an explicit recognition of one still vital to physical science, viz. that all actual

or possible changes in Nature are bound together in reciprocal relation to one another. It is as if Aristotle, blundering about among the thickets of error, had stumbled to a point of view from which there comes into his sight a conception of Nature which still guides and controls the modern scientific mind, viz. that it is a *system.*

At the next step in his account we shall find another similar anticipation of a view of modern science. He recognizes the existence in Nature of certain kinds of bodies, whose constitution is complex or composite. Instances of these are stones, metals and, in general, minerals; but more interesting and important instances are the kinds of bodies of which the physical organisms of living beings are composed ("organic bodies"), *e.g.*, bone, bark, blood, etc. Of both sets he holds that in their composition there are present all four elements in various proportions or "doses." In the compound, however, these elements give up their several distinctive properties, and are so blended that there emerges a new nature of a higher order, with new modes of movement, etc. The nature of such a complex or compound depends upon the particular numerical proportion of the four elements in its composition. As each of the four elements can in the process of Nature be transformed into any of the others, it follows that a compound body of the type A may be gradually transformed into one of the type B. This is, according to him, what happens in the physiological processes of Nutrition, Growth and Decay, and even in Reproduction. All this sounds like an anticipation of some of the doctrines of modern Chemistry (especially Organic Chemistry) and Physiology. To these first composite bodies he gives a name (*Homoeomerē* or "self-similars") which signifies that in any specimen of any one each of its "parts" is similar to each other and to the whole, so that no mechanical partition of it can without destroying it divide it into its "elements."

Next, he recognizes that several such bodies may be compacted by Nature into a new and still higher order of structure, which we should call an "organ" of a plant or animal, *e.g.*, a leaf or a hand. Here the mode of conjunction is a mere congregation or conglutination of the parts, which in it preserve their distinction of kind from one another.

Last of all, such "organs" are combined with one another, and with portions of the (simpler) *Homoeomerē* (possibly also with portions of nearly pure elementary bodies), into these "organisms," which are the bodies of plants and animals. These elaborate structures are the final or consummate results of the constructive powers of Nature.

These constructive processes (which have also converse destructive processes) are not creative but formative. In them Nature is always working on a given material, and is imposing form upon it, further

and higher form. In them also Nature is, to use our modern words, expending energy and effecting real and substantial alterations. It is, further, realizing ends (that is, raising its results to a higher order or level of being), but it is doing so blindly or without foresight. Nevertheless, in the result—which is Nature as we now find it—there is a teleological character: Nature (*natura naturata*) is what Mr. Bosanquet calls "a *de facto* teleological system."

Here we can scarcely avoid being reminded of such very modern notions as that of Evolution. Might we say that Aristotle especially in respect of vegetable and animal organisms views them as products of Evolution? I think we must say, "No." He does not do so even in the form in which Kant spoke of it as an hypothesis. Kant thought it possible to suppose that in a time *now past* Nature may thus (*i.e.*, "evolutionally") have given birth to the forms of organic life now found by us in existence, but not to suppose that process to be now going on. Aristotle regards forms or types as eternal, not generable, and therefore never having been generated; while, on the other hand, the processes of Nature of which he speaks are now, and indeed always, going on, always producing results which are no sooner reached than (equally naturally) they at once begin to decline and decay towards corruption. There is nothing to be gained in the understanding of Aristotle's conception of the processes of Nature in the organic or inorganic worlds by using evolutionary language in the exposition of them, or treating him as an Evolutionist born out of due time.

The discerning reader will have noticed the absence from my account of Aristotle's Physics of a more surprising absentee. Does he say nothing of Causation, and where, if anywhere, does he bring in the notion of Cause? Of course, he constantly, in speaking of the processes of Nature, uses a word or words which we translate "Cause," and in reproducing his account of them I have with difficulty avoided it. But—once more—his notion of "Cause" is very different from that of modern science. No doubt, to him, these processes are all, if not uniform, at least "regular": they follow "rules." The web of all the operations of Nature can be disentangled into courses or threads or chains or series of connected events, in which each successor requires for its occurrence the occurrence of a determinate predecessor; but the earlier occurrence, though a necessary condition of the later, does not determine it, does not "produce" it, and so is not what *we* should call the "cause" of it. It is not even what we after him call the "efficient" or effective "cause" of it (*his* "efficient causality" is not a relation between two *events*). In the connection between events in Nature the former

event is never more than an indispensable condition of the latter: it *does* nothing—no, not even when the second always or uniformly follows the first. Constancy of conjunction between two kinds of events does not mean that an instance of the one "produces" an instance of the other, or has in itself the *power* to do so. The only things which, according to Aristotle, have such powers are not events or even acts, but *agents, i.e.*, substances, or what some now would call "continuants" in Nature. Here I must once more remind the reader that, according to Aristotle, all events in Nature are actualizations or manifestations of *passive* powers, changes in substances which are not actions but affections of them, all conditioned but not *caused* by similar affections in other substances, and that without beginning or end. Hence the "agents" in Nature are really "patients," and, though the Physicist may among their operations distinguish between "active" and "passive," the distinction is really a relative one between what are in reality both "passive." To anticipate an Aristotelian doctrine which lies, if not outside his Physics altogether, at least on its extreme frontiers where it merges into Metaphysics, nothing is properly "active" which is not beyond or above "Nature."

As with this acknowledgment of the fact that to give a complete or satisfactory account of Nature we must posit or suppose in the Universe a complement of it in a region of what, if not to be called the "supernatural," is at least the "supranatural," we should expect his account of Physics (as the science of all that is "natural") here to close, and to be followed at once by an account of this supranatural region and its contents. What we do find offered to us in his works is, however, by no means quite so simple as that. No doubt we do find that his Physics towards its end runs out, or rises up, into such a literal "metaphysics" or "supra-Physics." Within his *physical* works, at many places in their course, and especially as we near their close, there is opened before us the prospect of an account to be given of that complementary region of the Universe and its contents, and indeed there is there supplied a sort of first sketch of that account itself. He does not call this "Metaphysics," or give it any name. In what he there says he confines himself to developing the notion of a First or Primal Mover, outside or above Nature, the eternal unmoved or immovable Source of all movements within Nature. It is as if he regarded as the one thing still left to be accounted for in his whole philosophy the existence in and all over Nature of the total fact of perpetual Movement or Change; above all, of the endless revolutions or rotations of the heavenly bodies in the supralunar region of Nature; as it had nothing in mind but to crown his Astronomy (and therewith

his Cosmology) with an account of what the primary sources (or sources) of all such movements or changes must in essence be.

Such, in little more than its skeleton, is Aristotle's account of the order or system of Nature, of the framework and chief contents of the physical Universe which is our total environment, the scene of our lives, the theatre of our activities, as it extends from the centre of the Earth to the utmost circumference of the Heavens. It is the result of the first attempt by man to think out an account of Nature as a whole, and in its main lines of structure, and in the thinking out no pains were spared by its author. Doubtless, our verdict upon the result of such titanic efforts must be that it is in the main mistaken—not the knowledge of reality which its author claimed that it was. Yet, strangely enough, it was an error without the making of which the science of Nature could not have made progress or reached as far as it now has. Perhaps Francis Bacon was profoundly right when, reviewing the history of Science, he said: "Citius emergit scientia ex errore quam ex confusione." But this is not the place to enlarge upon the way in which the commission of errors furthers the advance of Truth. At any rate, we can scarcely view with less than a kind of respectful awe this first daring venture of human reason to discover in what environment Man lives his life and does his work.

(*To be continued*)

CHANGE

G. R. G. MURE

II

§ 21. Until a few years ago the hope of the physicist seems on the whole to have been that he would eventually be able to exhibit a single interconnected system of perfectly deterministic causal laws. He took the relation of cause and effect in all change to be such that from a determinate antecedent state of that which changes there must necessarily follow a different subsequent state of it, and it was assumed by him that complete knowledge of the antecedent state must enable exact prediction of the subsequent state. I do not think it matters here whether that which changes was taken as a limited subject of change or as the whole physical world. Doubtless the assumption was that the whole present state of the world is the necessary consequent of its whole past state, but this did not seem to affect the character of the necessary nexus detectable within the limited subject of change which happened to be occupying the physicist's attention at the moment. Doubtless, for example, the whole stellar universe was taken to be operating in any case of gravitational attraction, but all cases on any scale seemed amenable to the law that gravitation operates in inverse proportion to the square of the distance between the two bodies concerned, provided due allowance be made for the pull of other bodies operating according to the same law. For though the physicist still believed that in principle all phenomena, macroscopic or microscopic, could be reproduced by a working model, yet his laws were quantitative laws; he assumed after Descartes that physics has to present qualitative change mathematically in quantitative terms. In short, his laws were identical in their instances and not also diversified in them.

§ 22. Thus on the whole the physicist interpreted the relation of cause and effect as a necessary nexus of the temporally prior with the temporally posterior, the prior inexorably conditioning the posterior without the operation *a fronte* of any final cause. This is, I think, no more than what remains of Aristotle's efficient cause when you have excluded formal and final cause from a world where value is treated as irrelevant; it is just that necessary sequence in time which Kant took to be the essential character of causation.

With this view the physicist was usually content. Yet occasionally some hesitation betrayed itself, and, half conscious of certain

difficulties involved in explaining cause and effect as no more than necessary sequence in a world controlled by rigidly deterministic laws, he would claim that he only described and did not explain.

§ 23. Now Kant pointed out that causation so interpreted inevitably begets an indefinite regress of cause behind cause. The sequence implies a primary cause, the presence of which as a first term of the sequence would nevertheless violate the definition of any term in the sequence as being both cause and effect. He saw that any term in the series is in the end only contingently determined, and that the series is not a self-subsistent whole, but he held the category of cause and effect to be a form intrinsic to the physicist's thinking. There is, however, a further difficulty. If the cause is really the necessary and fully sufficient condition of the effect, what is there in the principle of causation to determine the order of the terms? Their relation becomes absolutely reciprocal. Doubtless when we find the White Queen first crying and then cheerfully pricking her finger, we are shocked by the absence of something which we count on in our experience; but of this something the principle of causation so interpreted offers no account. An absolutely deterministic series has no reason to show why it should not be reversed. The laws of motion and gravitation which on the classical view govern the earth's orbit, admit of its actual motion; but they admit just as well of the exactly opposite motion. This becomes quite obvious when they are mathematically symbolized and past is called $-t$, future $+t$. In short, something is missing.

§ 24. It was, I think, Henri Bergson who first made quite clear what this missing something is. He pointed out that in the world of classical physics there is no genuine change, because there is no genuine time. Genuine time is the measure of a change which has irreversible direction. Classical physics was indifferent to direction. Time in the universe which it strove to envisage was a dead fossil-print, a mere fourth dimension extending a spatial frame of reference. Kant did not see this: if he had, he must have radically altered his account of the empirical ego.

§ 25. The apparent success of prediction based upon classical primary laws tended to conceal this absence of genuine change. The appearance of a comet at a place and date foreseen seemed to show that a system of these rigidly determining laws really underlay and explained the observed changes of phenomena. But in fact the present prediction of a comet's future visibility is no more a *fore*seeing than is the present calculation of an unrecorded appearance of it in the past. Once the mathematical formula of its path is worked out, the appearance of the comet is *already apprehended*; for it is nothing but one of the positions of which the

formula gives the totality. When the comet actually swings into view there is no change of which the classical physicist has any account to give. His law, as we saw, is identical, and not also diverse, in its instances; it is not a theme developing itself in and through its various phases. It is as ineffective in explaining its instances as the Milesian substance. And the statement of it turns out to be a mere tautology. As Professor Eddington points out,[1] the First Law of Motion, "Every body continues in its state of rest or uniform motion in a straight line, except in so far as it may be compelled to change that state by impressed forces," really does no more than assert that every body continues in its state of rest or uniform motion, except in so far as it does not. The instances of the law, the supposed phases of change, do not differ from one another, or from the bare identity of the law itself. They are mere repetitions which mathematics can enumerate and measure, but qualitative difference and real change they do not exhibit. Or the tautology may be expressed in this way. Each instance of the law is an event wherein a cause fully determines an effect. But this absolute mutual relevance and interlocking destroys any difference between cause and effect. Not merely is their order reversible: the terms coalesce; nothing happens; there is no event.

§ 26. Thus it seems that bare efficient causation breaks down as a theory. The world becomes again the Parmenidean One without change and without internal diversity. At best, if we allow the events, the instances of the law, to retain numerical difference, physics relapses into mathematics, where admittedly change has no place. I am not competent to ask whether the recent suggestion by certain mathematical logicians that mathematical truths are tautologous is a further stage of this descent to nothingness.

§ 27. But the physicists have lately been overhauling their assumptions. I am not clear that the four-dimensional continuum of the relativists admits real time any more than do the formulae of classical physics. There has, however, been a definite reaction from the classical ideal of rigidly deterministic law. The primary laws of physics, we are now told, can apply only to the behaviour of a singular individual, and I think that has already become obvious from our criticism of them. On the other hand, the problems which begot the quantum theory have apparently shown that the behaviour of every electron and proton cannot, as was once supposed, in principle be worked out exactly according to such laws. The quantum theory relates to the transformation of energy, and though according to a primary law energy is always conserved, yet according to a secondary law, the Second Law of Thermodynamics, the successive forms which energy takes constitute an irreversible

[1] *Nature of the Physical World*, pp. 123–4.

descending scale. Each step means a loss of organization and the increase of a random factor in the behaviour of the atom's components. On the whole, it seems that the term "random" is not here intended to express a mere cloak for ignorance on the part of the physicist: we are to assume an actual element of indeterminacy *in re*. For the fixing of an electron's velocity and the fixing of its position are processes which necessarily (if that is the proper word) interfere with one another; *i.e.*, if you fix either precisely, the other can be fixed only within a not further determinable range of variation.

§ 28. The inferences which seem to be drawn by the modern physicist are two: (1) that an electron in motion is not something of which a model could in principle be constructed, for it can on occasion occupy the whole of its orbit round its proton simultaneously; (2) because the *range* of variation (either of velocity or of position) can be precisely limited, therefore the laws of the transformation of energy are laws of real probability, probability, *i.e.*, which is *in re*, and the degrees of which are in no sense at all a measure of the physicist's ignorance. We may draw a third conclusion: (3) with secondary laws, such as the Second Law of Thermodynamics, genuine time and change with irreversible direction are once again admitted to the world of physics.

§ 29. If I might hazard a guess at what has happened, it would be this. The rigidly deterministic primary laws lead to an *impasse*, because they deny genuine change. Now if you insist upon expressing genuine change everywhere and flatly deny primary laws, you will find yourself expressing change as sheer contingency, mere substitution of a new state of things which has no connexion with what it supersedes. It will seem to you at first that if rigid necessitation can make no advance, can express no real change, then a change is an event which one can call at will miraculous or sheerly fortuitous. (Dr. Broad's odd doctrine in *Scientific Thought*, Chapter II, of change as constantly adding to the sum-total of events, seems to come very near this.)

But it is more likely that you will compromise. You will come to see that absolute contingency is by itself no more satisfactory than rigid *a tergo* causation, and you will go on and try to combine them. That, I suspect, is what modern physics is trying to do. Some primary laws are still accepted, though the conviction is growing that they are all really laws of probability. These laws of probability in spheres where real change seems undeniable are formulated as a combination of necessity and contingency rather hard to express. You may say that the limits of a group of particles, some one of which is bound to behave in a certain way, are antecedently determined, but no particular one of those particles is antecedently

destined so to behave. Or you may say that the behaviour of any given particle is antecedently determined within a certain definite range of alternatives, but nothing determines which alternative it shall select. That the law of this behaviour is often called statistical because it is reached *ex post facto* by averaging results may prove a useful indication how the physicist's thought is running. But if he maintains that this limited indeterminacy really resides in the particle and the group of particles, it is not the immediately important point. So far the position seems quite self-contradictory.

§ 30. As it stands I can see no solution. We must, I think, cast back and look again at the premisses of this paradoxical conclusion.

I think we can find the tacit assumption which makes the difficulty. It occurs to me to put this question: If it is not possible in principle to construct a model of the modern electron in motion, because it would have to be displayed as in several places at once, can one any longer assume that what one is dealing with is a mere plurality of singular particles? The modern physicist admits that primary laws only work when confined in their application to the behaviour of a singular individual. Yet the secondary laws of probability, to which he has recourse when this barrier is lifted, he formulates as laws of the behaviour of a plurality—as the term "statistical" easily betrays. But a plurality is nothing but an *aggregate* of singulars, and its behaviour can be nothing whatever beyond the sum of the behaviours of the singulars. Now the singular individual dealt with by the primary laws did not, as we saw, really change in behaving by the rule which the primary law dictated. But the secondary laws were formulated to express the transformation of energy, which *is* real change in real time. Hence, whatever it is which changes when energy is transformed, it is not a mere plurality of singulars. It is something which persists self-same, but self-same *through* diversity; something into which one nature enters whole and yet incomplete in each phase; something which is not a plurality of atomic singulars, but a unitary system of diverse phases.

§ 31. Thus the secondary laws were not formulated to work *in pari materia* with the primary, but they have nevertheless been given the same fundamental logical structure as the primary. And the adjustments which have had to be made in formulating them are obviously not organic to this foundation. We have either to say that these laws cannot be strictly accurate—a view, I understand, rejected by the vanguard of modern physics—or that they measure a real indeterminacy. What seems instead to be wanted is some conception of concrete unity *in* diversity, which may prove hard to formulate, but at least does not take the crude form of a plurality of singular units. We cannot make progress with a mere juxtaposition, without any overlap, of sameness here and difference there—as we discovered

some time ago. Of course you can always make a show of analysing a system of unity in diversity as a plurality of units, but if you do you fail to touch the special nature of the system. And if instead you honestly try to account for the concrete diversity which any genuine change presents, you are bound to reach contradictions such as the statement that a quantum of light is large enough to cover the face of an 100-inch mirror, and yet small enough to enter an atom and endow a released electron with the whole amount of its own action. These contradictory characters of a quantum emerge, I understand, always the one before and the other after a transformation of energy. Surely; for an atomic singular cannot really change.

§ 32. The classical physicist would perhaps have answered that unless he may assume that he deals with a plurality of units, he cannot measure, and that the possibility of mathematical measurement limits the sphere of physical inquiry. Yet that would surely be a confession that in the face of the whole problem of energy physics is perfectly helpless.[1] Mathematics can never measure real change.

§ 33. In short, the true scope of physics is very hard to determine. It looks as if there were elements in physics which any definition strictly severing physics from every other science would be bound to exclude. Physics seems to borrow qualitative diversity from above and quantitative method from below, and to find it not easy to amalgamate them. Perhaps Hegel was right when he said, "The only pure physicists are the animals." But, after all, the precise scope of any inquiry is the last as well as the first question for the inquirer, and the physicist's domestic difficulties are not our immediate business. What concerns us is to ask how far our hypothesis that all real change is a development or a decay, exhibiting a partial fusion or overlap of permanence and flux, survives our rash excursion into the realm of physics.

§ 34. Now by reinterpreting the doctrine of indeterminacy, by substituting a system of phases for a plurality of units, we came back to our own hypothesis. And yet I do not think that our concept of change emerges quite scatheless from the test. We urged that to leave necessity and indeterminacy merely juxtaposed without overlap gives rise to hopeless confusion, and certainly if there is any overlap or fusion at all, we can claim that no *mere* necessitation and no *mere* indeterminacy remains in our concept of change. But the difficulty I feel is that unless there is *complete* fusion—which *ex hypothesi* there is not—there does remain in our concept a defectiveness which cannot be expressed without falling back for the purpose on mere juxtaposition. If the potential must become actual,

[1] Assuming, of course, that the Second Law of Thermodynamics is true, and that physics cannot exclude genuine change from its world.

it would seem that there is no real change: a rigidly deterministic law governs the process. If there is real change, how can we avoid saying that the potential might not have been actualized precisely as it was in fact actualized? Aristotle, from whom we originally borrowed our hypothesis, felt this difficulty when he said that a stone thrown into the air has a potentiality which can and must be actualized in one way only, *i.e.*, by falling; whereas the development of human character proceeds alternatively either in a good or a bad direction, because it starts from an essentially two-way potentiality. He called the one-way potentiality irrational, the two-way potentiality rational, but he did not fully solve the problem; he could not entirely exclude contingency from his notion of free will.

§ 35. Nor, again, does it seem to me that Bergson, despite his brilliant exposure of the pseudo-time of classical physics, provides us with any real way out of this *impasse*. I confess, however, that I am not quite sure what to make of his *durée concrète*, his self-directing *élan vital* which contains the whole past in itself, and is yet a perpetual creation of novelty. Sometimes it seems dangerously to resemble Heracliteanism, and to be a mere denial of permanence in the interests of a flux which is merely being mangled and misinterpreted for practical purposes when the intellect introduces any element of fixity into it; sometimes, on the other hand, it looks more like an effort to formulate that notion of an absolutely concrete change which we have already seen break down under criticism.[1] I have something of the same difficulty with the *divenire* of the Italian idealists. Croce's conception of "becoming" (still more Gentile's) often appears to be a mere flux without permanence, and yet one finds both Bergson and Croce using terms such as "the Absolute" and "the Whole," which seem to indicate an effort to avoid this conclusion. It is interesting to remember that we found the same ambiguity in the Fire of Heraclitus, which became the very symbol of flux, but was to begin with an eternal substance formulated in accordance with the Milesian tradition.[2]

§ 36. Thus our difficulties are not lessened. At best we have discovered that physics cannot escape them if it tries honestly to deal with real change. This may excuse us from pursuing the problem through the more concrete natural sciences, since if physics must accept the difficult notion of a transition between a potential and an actual which are essentially correlated, or else give up the right to talk of change, then *a fortiori* this is true of those other sciences. If I had the knowledge or the time, it would be interesting to pursue the subject in the realm of economics. But I have not, and our own philosophic problem still remains.

§ 37. I had better begin by re-stating it as it now appears.

[1] See Part I, §§ 10 and 11.

[2] *Ibid.*, § 4.

Wherever there is change, a single subject enters whole into every phase of the change, and yet in every phase suffers a loss or gain in completeness. The phases are complementary, each contributing essentially to the whole which assumes them in turn; and yet they are alternatives, each of which the whole assumes *instead of* another. This contradiction—the defect of our concept of change—appears also in the difficulty that if a new phase constitutes a real advance, it is hard to deny that the advance might have taken a different direction: we seem unable to exclude some tincture of indeterminacy. Yet we have this advantage over the modern physicist. We cannot express the defect, the lack of complete fusion, in our concept of change without recourse to the old juxtaposition; but our concept, we claim, still has its positive aspect as a union which is more than mere juxtaposition, hard as we find the task of formulating it, whether as a freedom which is more than contingency, or as a necessity which is more than rigid determinism. And on the strength of this positive aspect we are prepared to accept the whole in its complete essential nature as somehow determining *all* process between potential and actual. We take the system as operative in every movement from phase to phase, and not as being a mere plurality of atomic singulars. We do not accept the bare disjunction: either there is a rigid *a tergo* causation, or else something happens without a cause. We postulate a partial overlap; but can we express it more clearly and justify it further?

I can only suggest the line of solution to which I think we are driven.

§ 38. If the problem is confined to a limited subject of change, be it the transformation of energy in a degenerating physical universe or the evolution of natural species on this earth, the rise and decline of civilizations or the progress and corruption of individual character, then there is no solution. Moreover, there is in these examples of real change, and in any others which we might take, no means whatever of determining whether in the *whole* course of each specified type of change the process is in principle anabolic or catabolic, on the whole a progress or a decline; or again, whether, as Aristotle supposed, it is an unending cyclical alternation of the two. The principle of change, as we have formulated it, can no more tell us this than a primary law of physics can decide whether the stars shall move forwards or backwards in their courses. We postulate a climax as the classical physicist did not, and within a limited stretch of change we can decide between these alternatives; but nothing in our principle precludes the extension of our stretch, and if it be extended nothing can intervene to save us from the same indefinite regress which Kant detected in physical causation.

§ 39. On the other hand the various spheres in which we encounter

real change do seem to exhibit different degrees of overlap, and by comparing them we may perhaps hope to detect and express the positive side of our concept. The identity which binds an initial fully organized physical universe with a world in which energy has reached the dead calm of total equilibrium, and the identity which binds together the protoplasm and the evolved animal species, are tenuous threads. But the unity which develops itself in and through the actions of a strong and consistent human character, or in and through the achievements of a great artist, does not link so loosely the phases of its differentiation. His actions flow freely from the agent, his works from the artist's genius; but this freedom is not a rigid determining, for each practical and each aesthetic act is a creation. Nor is this creation the caprice of indeterminacy; for the seal of one personality is set upon each action and each work of art. The phases of practical action and of artistic creation imply a climax, a single practical and a single aesthetic end, which is not fulfilled in any single phase; yet this very allegiance to a whole beyond itself, which each several phase confesses, gains expression precisely in that uniquely individual perfection which we seem to enjoy in any great work of art; precisely in the absolute value which we are moved to attribute to a single heroic act, even when it appears to fail disastrously in realizing that unitary plan of life by which alone it was dictated. Here at least the positive fusion we seek seems indisputably manifest.

§ 40. Yet we must not be too sanguine. We have found degrees of comparison, but we have not found a superlative. It remains true that in no one sphere of experience, in no limited subject of change, is this freedom, transcending alike necessity and indeterminacy, consummated. Perhaps the artist and the man of practical genius—even the thinker—may seem to us in some sense at once to foreknow and to create their destiny. Certainly the least reflection on moral conduct reveals the paradox of an agent assuming that the goodness which can and must be achieved only by his action is nevertheless a character of the real, is rooted in the nature of the universe. Indeed, once we recognize a standard of value in change we cannot escape the notion of an overlap of flux and permanence, and when we acclaim absolute value we cannot help but think that we enjoy eternity in an instant. And yet we partly deceive ourselves. The deeds of practical genius, the creations of the artist, have still their negative aspect of defect as the products of trial and error; in some measure each still is substituted for the one which went before. The action is a means only; the end is not fully immanent in it. The poem or the symphony belongs to an early manner which the artist would have discarded before he did if his insight had been truer. When we reflect in this vein, the old spectre

of a mere successiveness, the Time of the classical physics which does not move, or moves without true direction, the lifeless fourth dimension which turns change indifferently into a rigid determining or a sheer contingency, re-emerges in the heart even of those experiences which we account the best we have.

§ 41. All this remains true. Nevertheless, in one sphere of change the whole which changes is immanent as in another it is not. The fusion of permanence and flux is not everywhere the same in kind and degree.

This fact must have a significance. Can we find it if we turn again from a limited subject of change to the universe as a whole?

I cannot here attempt a direct answer, but this I would suggest. In setting one experience above another because in it there is a nearer approach to complete fusion of flux and permanence, it seems obvious that we are judging change itself in the light—the very dim light perhaps—of what is more than change. And this light by which we criticize must come from somewhere. We try to formulate the notion of a subject which enters absolutely whole into diverse phases, and while we think of this subject as changing in time, we only succeed in uttering contradictions. Yet anything less than this notion fails to satisfy our thinking. Now, wherever the subject of change is limited, we are foiled by the incomplete fusion of permanence and flux, the incomplete immanence of the subject in each phase of its change. We might therefore infer that the contradictions which continue to break out in any limited sphere are due precisely and only to its limitation, its lack of context. We might think that we must reinterpret the potential and the actual as the apparent and the real, passing beyond a mere *de facto* hierarchy such as on the whole Aristotle's universe seems to be[1]; and so we might conclude that only in reality as a single whole is this complete fusion, this entire immanence, made good.

§ 42. It is futile, I think, to argue this conclusion directly. The question is rather whether there can be found any other spring for philosophical speculation, critical or constructive, than the impulse to formulate some such notion as this. I have not succeeded in finding one, but the history of philosophy is itself a crucial example of process in which permanence and flux overlap but cannot wholly fuse. It is a criticism of change, and yet itself must change. It cannot wholly overpass and transcend the limitations of the individual thinker as such. It may be the immanence in him of a reality beyond himself which gives the thinker this impulse to transcend change, but *for him* that reality cannot be fully immanent. For him

[1] Despite his doctrine of pure *ἐνέργεια*, in which he attempts, without complete success, the absolute fusion of permanence and flux.

the reality of his own thinking must remain in part potential, and he can never quite definitely formulate the notion of a timeless climax of development which lies beyond development itself. The greatest thinking is no more immune than the noblest art or action from defective overlap of fixity and flux.

(*Concluded.*)

TIME, SPACE AND REALITY

Canon PETER GREEN

Some time ago I had a shock. I was reading, in the *Mathematical Gazette* for March 1931, Sir A. S. Eddington's presidential address to the Mathematical Association in 1930. And quite suddenly I came on the statement that the number of protons in the universe is either 7 or 14 with 78 noughts after it. My breath was taken away. Readers of R. L. Stevenson's story, *Providence and the Guitar*, will remember the maiden lady who, after hearing what the Commissary said when he was woken up in the night, felt her maiden modesty so outraged that she doubted if she ranked any longer as a maiden lady. I felt just like that. I felt that my philosophic modesty had been so outraged that I doubted if I ranked any longer as a humble student of philosophy. Sir Arthur has certainly not counted them. Then how in the world does he know that they are what he says they are?

To the non-mathematical reader two lines of escape suggest themselves. After all, when you are dealing with a figure ending with 78 noughts the difference between one amount and twice that amount is pretty considerable. There is, so to speak, a margin of error. But that will not do. Sir Arthur does not offer us some figure between 7 with 78 noughts and 14 with 78 noughts. He offers us those figures as exact alternatives. It is either one or the other. An illustration may possibly help (or exasperate) the reader. If a flea were walking about on a leopard skin (for the purpose of this experiment the leopard must be assumed dead and skinned) he might count the spots but he could not be sure that he had got the number right till he knew whether the spots showed through to the inner side of the skin. If they did not, then the number he arrived at by the count, say four hundred, would be correct. If they did show through, then the real number would only be half as great, namely, two hundred; for he would have counted each spot twice. Similarly you can't be certain with curved space-time whether you have counted a proton once or twice. This illustration will probably exasperate mathematical and non-mathematical readers about equally. But it is the best I can manage, I fear.

Another line of escape which will suggest itself to some is the fact that different mathematicians offer us very different universes to choose from. You can have your universe according to Einstein or according to De Sitter, according to Sir Arthur Eddington or to Sir James Jeans. You can have an expanding universe, a contracting

one, or a static one. And, finally, you can, I believe, still have one finite, or infinite, as you please. Perhaps then, it will be urged, Sir Arthur, in telling us how many protons there are in his universe, is merely exercising his undoubted right to make his own universe the size he prefers. But I fear that will not do. There may be several kinds of universes to select from. But, given the pattern you select, mathematics will tell you how many protons there must be in it. To take an illustration from third-form mathematics, we may say that you may make your flower-beds with any number of sides you like, but if your gardener is careful to have it of a regular shape then mathematics, relying on the profound fact that all the angles of a regular polygon together with four right angles are together equal to twice as many right angles as the figure has sides, will enable you to foretell (to the amazement of your good gardener) the exact size of each angle.

Given the type of universe Sir Arthur prefers, he can tell us how many protons there are in it without counting them.

But ought he to be able to do so? Is it not almost indecent that he should do so? It is, of course, no more than an extreme example of the problem that confronted Kant. How is synthetic knowledge *a priori* possible? But how extreme an example!

Then the other day I found the solution. Sir James Jeans says, in his book *The New Background of Science*, that Heisenberg's equation $pq - qp = \frac{h}{2\pi i}\epsilon$ suggests that subatomic nature cannot be represented in time and space at all. But that at first is a truly shocking idea. Reality cannot be like a cow looking into the window of a cowshed, half in and half out of the shed. Either reality is in time and space or it is not. It cannot be in time and space when it is viewed in the large and outside time and space when looked at in small enough detail. There seems to be only one solution of our difficulty, and that is to deny that reality is in time and space at all. We must boldly say that to be observed is to be in time and space and that to be in time and space is to be observed. To give my essay a nice mathematical appearance I will write that as an equation:

(To be observed) = (To be in Time and Space).

If some miraculous quickening of our eyesight or some wonderful improvement in our microscopes enabled us to see the atom, then subatomic nature would be "in time and space."

Let us try to see what this involves. Readers of Mr. H. G. Wells's short stories will remember the story *Through a Window*. The hero with both legs broken lies in bed and sees what he can see through the window. Anything outside the limits of vision permitted by the size of his window is unknowable to him. Let us suppose that

the window faces south and that the river (obviously the Thames) runs from west to east. Sometimes, when the sun is rather too hot, the bed is put against the north wall. Sometimes, on fine mornings, it is put close to the window. Sometimes the head of the bed is put against the west wall, so as to allow the patient to see as far down the river as possible, and sometimes it is put against the east wall, so as to allow him to look as far up the river as possible. By the time the man has noted how far up and down the river he can see from each position, and how far up and down the acacia-tree, which stood just outside the window, he can measure when he is against the north wall, and how far up and down it when close to the window, he will only need to know the length and breadth of his bed (I do not think he will need any other data) and he will know all there is to know about the size of his bedroom and the area of his window. *Of the river and the acacia-tree he will know nothing.* The river—how long it is? how deep?—those are questions he cannot hope to answer. The acacia-tree—how far below his window ledge the roots lie and how far above the window's top its height extends are hidden from him for just as long as he remains in his sick room. For river and for tree alike to be observed is to be within the frame of the window, and to be within the frame of the window is to be observed.

Does science, then, tell us nothing except about ourselves? Is it all, at the last resort, a subtle form of anthropology? Man has long known that he supplies the old-fashioned "secondary qualities." We know, too, that we each supply our own time and space, carrying them about with us as the snail carries his shell. How much farther will the process go? Will some mathematician in the perhaps not very distant future give us a wave-equation requiring n dimensions from which he will deduce the size and markings of an as yet undiscovered bird of paradise in unexplored New Guinea? Why not? Size after all is only another name for space, and colour another name for wave frequency. To one who can count the protons in a universe the colour spots on a bird in New Guinea should be child's play.

Miss Codger in *Martin Chuzzlewit* says (God bless her!): "To be presented to a Pogram by a Hominy, indeed, a thrilling moment is it in its impressiveness on what we call our feelings. But why we call them so, or why impressed we are, or if at all we are, or if there really is, oh gasping one! a Pogram or a Hominy, or any active principle to which we give those titles, is a topic, Spirit searching, light abandoned, much too vast to enter on, at this unlooked-for crisis." I sympathize with Miss Codger. To be introduced by a mathematician to a universe (or a bird of paradise in New Guinea) which he has never seen, a thrilling moment is it in

its impressiveness on what I call my feelings. But if indeed there is a mathematician, or a bird of paradise, or—but need I go on?

What I have written is not in any way derogatory to natural science. It tells us what it greatly concerns us to know. Only of reality it tells us, can tell us, nothing.

And "hence a paradox which comforts while it mocks." Science which strives to be objective, and to eliminate the personal equation, in the end tells us nothing except about the framework which we ourselves impose on reality. Ethics and Aesthetics, the search for goodness and for beauty, which seem so subjective and so individual, may perhaps prove the only ways by which we can come into touch with reality. And they seem to promise to be very broad highways if we will only tread them.

DISCUSSION

PROFESSOR WHITEHEAD'S *NATURE AND LIFE*

THE EDITOR

THIS little book (published by the Cambridge University Press, price 3s. 6d. net) consists of two lectures delivered before the University of Chicago in October 1933. Those who are acquainted with the author's philosophy expounded in detail in his earlier works will not find anything new in Professor Whitehead's latest book. They will, however, enjoy reading in a concise form what amounts to an outline of his philosophy, and following his illuminating discussion of the principles upon which it is founded. Briefly, it may be said that the book is an attempt to show that Nature cannot be truly conceived as a static and lifeless thing, but must be interpreted as a creative process which has goals and values.

It will probably be most beneficial to those readers of this journal who are interested in Whitehead's Philosophy, if the writer tries to give a fairly complete summary of the argument running through the book with the minimum of comment, thus enabling this distinguished thinker to state his case in his own way.

"Empty" Space and Matter.—The first of the two lectures of which the book consists is entitled "Nature," and is mainly occupied with describing the growth and development of the scientific conceptions of Nature during the past three hundred years, and in elucidating the implications involved in them. Whitehead conceives the task of Philosophy to be the search for the solution of the problem of how Nature is ultimately to be understood, and the question asked at the outset by him is—what is the most comprehensive and concrete interpretation of Nature suggested when all the facts of modern science and experience are taken into account?

In the sixteenth century a certain view of Nature began to sway the minds of thinkers. Nature was conceived as bits of matter organized or unorganized moving about in an otherwise empty space. These bits of matter were regarded as passive substances supporting various qualities, for example, shape, colour, smell, motion. Some of these qualities, such as shape and motion, were called "primary"; others, such as colour, taste, and smell, "secondary." The events in Nature, on this theory, consist in the changes which these qualities undergo, more particularly as changes of motion. Indeed, motion, giving rise to changes in spatial relation, is the only mode of interconnexion between these bits of matter. On this view, then, Nature consists of an unchanging, empty space with bits of matter possessing qualities and capable of locomotion, although the theory admits that life and mentality must somehow be given an appropriate niche in the scheme.

Whitehead points out that Natural Science in its growth during the last three centuries has one by one discarded every feature of the notion of Nature just described. First it denied that secondary qualities were in Nature: they were merely the mental reactions of the percipient. Then it abandoned empty space. From inferences derived from investigation into the transmission of light, space, far from being empty, seems to be a veritable field of incessant activities, although these activities cannot be directly perceived. A subtle type

of matter, called the Ether, was at first introduced to explain these activities, but has since been discarded. Moreover, the obvious behaviour of gross ordinary matter, indicated that the motions of matter are in some way conditioned by the spatial relations of material bodies to each other. Newton's laws of motion supplied a framework within which more particular laws for the interconnection of bodily motions could be inserted, and his great synthesis—the law of gravitation—was a stupendous success in the methodology of physics. But, says Whitehead, the forces which Newton introduced into Nature, left Nature still without meaning or value. The mass, motion and shape of a material body, provided no *reason* for the law of gravitation. "Even if the particular forces could be conceived as the accidents of a cosmic epoch there was no reason in the Newtonian concepts of mass and motion why material bodies should be connected by any stress between them; but the notion of stresses, as essential connections between bodies, was a fundamental factor in the Newtonian concept of Nature." In Newton's system, no ground is given why, in the nature of things, there should be any stresses at all. In short, Newton left all the factors of his system, mass, stress, etc., as disjointed facts, devoid of any principle explaining why they should be "together." "He thus illustrated a great philosophic truth, that a dead Nature can give no reasons. All ultimate reasons are in terms of value."

The elimination of the notion of empty space, as the mere vehicle of spatial interconnection, and the substitution of the notion of space as a field of incessant activity, has had an unexpected result in modern science. It has led to the abandonment of the notion of bits of matter as unchanging supports for physical properties. And the conception of the ether (regarded as a jelly-like substance) and of ordinary things like atoms, molecules, and stones, as "knots" in the ether has also been given up. "The modern point of view is expressed in terms of energy or activity, and the vibratory differentiations of space-time. Any local agitation shakes the whole universe. . . . Matter is a group of agitations, and this group is fused into its environment." It is important to realize the part played by the environment in the constitution of a thing. It actually enters into the nature of each thing. A group of agitations which we call a piece of matter, cannot, it seems, be detached from its environment. Consequently, says Whitehead, "there can be no such thing as a self-contained local existence." The notion of a self-contained particle of matter is an abstraction. What we call a permanent thing, such as a chair, a rock, or a planet, "is nothing but an average stability of certain elements in a set of agitations which are being propelled through a changing environment. In this average fact the time-factor takes the place of endurance, and change is a detail."

Nature as Process.—If we contrast the old doctrine of Space with the modern theory of space-time, we are impressed with the revolutionary nature of the change of outlook. According to the old doctrine, space was regarded as a substratum for certain entirely passive geometrical relationships between material bodies. That is to say, space whilst conditioning all the active relationships of material things, in no way *necessitated* them. According to the modern view there are no self-contained activities occupying limited regions. "Nature is divisible and thus extensive. But any division, including some activities, and excluding others, severs the patterns of process *which extend beyond all boundaries.*" With the view of Nature as an interrelated system of activities in which "change is paramount, the notion of space as a substratum for passive geometrical relationships is entirely inappropriate. The new physics must now perforce conceive Nature as a theatre of diverse forms of *process*. Consequently space and matter have been swept away, and

physics has become the study of the internal relations within a complex state of activity. But since no group of activities can be abstracted from its environment which "seeps" into it and partly *constitutes* the group, in the last resource it must be recognized that in any complex state of activity "the whole universe of physical action, extending to the remotest star cluster, is involved."

Types of "Things" in Nature.—At this stage in his treatment of scientific conceptions Whitehead gives certain warnings which should be heeded in all discussions of Nature. In the first place, we must remember the differences of "scale," and the differences of time-span. For example, the apparent absence of change within a second of time, tells nothing as to change within a thousand or a million years. We are inclined to take the modes of functioning of the human body as prescribing an absolute scale, but as a matter of fact there is no absolute standard of magnitude. In the second place, all the special sciences presuppose certain fundamental types of "things," a "thing" being whatever we can talk about, such as molecules, colours, and other sensa, as well as values. A science is concerned with a limited set of various types of things. But further, scientific thought must determine what types of "things" are exhibited in any given situation. Must they be expressed in the form "This is green" or "All those things are green"? Whitehead maintains that every science strives to get beyond this Aristotelian mode of expression, namely, attributing a predicate to a subject. Indeed, in his view the dominance of the Aristotelian logic for over two thousand years in Western thought has been nothing less than a calamity. "All attempts to combine the set of special sciences into a philosophic cosmology, giving some understanding of the universe, are vitiated by an unconscious relapse into these Aristotelian forms as the sole mode of expression. The disease of philosophy is its itch to express itself in the forms 'Some S is P,' or 'All S is P.' "

Finally, in the "quantitative" stage of any science, when the typical questions asked are "How much P is involved in S" and "How many S's are P," we must be on our guard against a "simple-minded" treatment of these notions. Unless we are watchful and critical, such quantitative notions can be thoroughly misleading.

The Notion of "Pattern."—According to the author, the most important concept for the understanding of Nature is that of "pattern." He goes so far as to say that apart from a presupposed pattern, quantity determines nothing. What, then, is to be understood by the notion of "pattern"? The answer given is as follows: In the first place it involves the concept of different modes of "togetherness" of various entities. For example, in a chemical mixture composed of carbon atoms and oxygen atoms "there will be an enormous number of alternative patterns for a mixture of any reasonable amount of carbon and oxygen. And even when the purely chemical pattern is settled, and when the region containing the mixture is given, there are an indefinite number of regional patterns for the distribution of the chemical substances within the containing region."

In the second place, every science is an abstraction from the full concrete happenings of Nature. But when a science selects certain factors in Nature for the purpose of special study, *it loses sight of the fact that there is a certain influx of the "excluded" factors into the group of factors selected for investigation.* "Thus we see that any single pattern of factors discerned by a special science, differentiates itself into a subordinate factor in an indefinite number of wider patterns." The inference from this fact is patent. Every special science presses out beyond its artificial boundaries for inclusion in nothing less than a complete cosmology. It is therefore clear that to overlook the question of "pattern" is fatal to the understanding of Nature.

We have seen that modern science has abandoned the view of Nature as consisting of bits of matter with certain qualities moving about in an otherwise empty space, and has substituted the notion of Nature as process, activity, and change. What, asks Whitehead, does this mean? What is being effected by Nature? "It cannot be that Nature's activities are merely the formulae of the multiplication table. Nature is full-blooded, and real facts are happening." The answers to these questions are given in the discussion on "Life," which is the subject-matter of the second part of the book, to which we now turn.

The Doctrine of Two Substances.—If Nature is considered apart from life, we are dealing with the notion of an activity which effects nothing. We are, in fact, saddling ourselves with a Nature without any content. Moreover, bare activity provides no intelligible principle of causation: we merely have a formula of succession. But it is clearly unsatisfactory to hold a view of Nature which says it is nothing but a *routine* which can be adequately described in physical and chemical formulae.

Whitehead maintains that the cause of such an unsatisfactory theory of Nature is the dualistic doctrine of two unrelated substances, matter and mind. It was Descartes who gave the clearest expression of this doctrine. According to Descartes, Nature consists of two substances, namely, (*a*) material substances with spatial relations, and (*b*) mental substances. These two substances are said to be entirely unrelated to each other: they are complete in themselves, and do not need each other for the fulfilment of their respective essences. This formulation of the problem of Nature in the sixteenth century in terms of two parallel unconnected substances, mind and matter, lacked comprehensiveness, since it left out of account vegetation and the lower forms of animal life. But the fundamental objection to the theory is that it made a sharp division between Nature and Life. In Whitehead's view, this dualism has poisoned all subsequent philosophy. If Nature is to be understood, both factors must be fused together. Nature must be viewed as a living and not a dead realm.

The Concept of Life.—In presenting an argument for an organic philosophy of Nature, it is important to make clear the notion of "life." In the first place the concept of life implies a certain absoluteness of self-enjoyment or *immediate individuality*. What is this self-enjoyment? It is, says Whitehead, "a complex process of appropriating into a unity of existence the many data presented as relevant by the physical processes of Nature." The self-enjoying individual arises out of this process of appropriation, and is called elsewhere in the author's philosophy an "occasion of experience." "Occasions of experience" or self-enjoying unities of existence are the real things which in their collective unity constitute the universe. In the second place, the process of Nature, in order to be intelligible, involves the notion of a creative activity belonging to the very essence of each occasion. Creative activity is that aspect of the process "which elicits into actual being factors which, antecedent to the process, exist only in the mode of unrealized potentialities." Here we have the notion of the self-creation of the ultimate individual unities, creativity transforming the potential into the actual. In the third place, the notion of life implies the character of "aim." By the term "aim" is meant "the exclusion of the boundless wealth of alternative potentiality, and the inclusion of that definite factor of *novelty* which constitutes the selected way of entertaining those data in that process of unification." In other words, out of many alternative ways in which "enjoyment" might be realized, only one is selected. It is clear that the entertainment of an "aim" involves the operation of something that is purely ideal in the process, and this ideal controls

and directs the process. The process is what it is because its successive phases exist for the realization of a definite end.

Life, then, as exhibited in an individual occasion of experience, possesses the characteristics of self-enjoyment, creative activity, aim.

Sense Perception.—The important question to be decided is whether Nature as observed by us possesses this factor of life. The answer Whitehead gives is in the affirmative. But we will follow the author's argument in greater detail. In the first place, he says it should never be overlooked that the body always plays a part in sense-perception. We see "with" our eyes, hear "with" our ears, touch "with" our hands, etc. It is defective doctrine merely to emphasize the external reference of sense-experience, and to omit the part played by the body. In the second place, sense-perceptions are said to be "extraordinarily vague and confused modes of experience." By eliciting into prominence the *external reference* side of experience, they fail to disclose Nature in any but a superficial way. "In sharp-cut perception a paving stone seems to be hard, solid, static. But if physical science be correct, this is a very superficial account. It tells us nothing about the molecular activities of the stone."

Now it will be obvious that if sense-perception by its very nature is unable to discriminate the fundamental activities within Nature, Science, depending upon sense-perception as its sole source of observation, can make no claim to self-sufficiency. If it is only making use of half the evidence, we can understand why "Science can find no individual enjoyment in Nature, no aim in Nature, no creativity in Nature." To use a metaphor, it examines the garment worn by a body, but neglects to investigate the body itself. The other half of the evidence is to be found where there are purposes and values. Science certainly has done a great work in observing those extensive habits of behaviour called "laws of Nature." But it must be remarked there is no "necessity" in any of those ways of behaviour. "They exist as average regulative conditions because the majority of actualities are swaying each other to modes of interconnection exemplifying these laws." But, judging from analogy, it would seem probable that the present "laws" of Nature will fade into unimportance as new modes of self-expression gain dominance.

Nature and "Aim."—In that realm of Nature called "inorganic," Science has discovered that Nature, in the present epoch, is governed by certain massive habits, which are termed "laws." The discovery of these physical laws has been based upon sense-perception. They are abstract, and as such disclose no aim in Nature. But the exact opposite is the case in regard to the sociological functions of mankind. Men form purposes, and purposes are *directive* of their bodily activities. Consequently, the notion of "aim" is fundamental in the explanation of these activities. Now scientific reasoning is dominated by the presupposition that mental functioning is not properly part of Nature. This view Whitehead regards as a mistake. He maintains that there is no sharp division between mentality and Nature. Indeed, he goes farther, and argues that mental operations are among the factors which constitute Nature. To divide up Nature into groups, such as animal life, vegetable organisms, single living cells, large-scale inorganic aggregates, microscopic events, may be useful for the purpose of scientific classification, but such sharp-cut divisions are dangerous for philosophy. All these various modes of Nature not only influence each other and require each other, but actually shade off into each other.

The Body-Mind Relation.—The main method employed in the observation of Nature is through vision, but Whitehead gives two grounds for suspicion whether visual or any other sense perception discloses to us the metaphysical

nature of things. In the first place, even in vision there is the intervention of the body: we see *with* our eyes. In the second place, "every type of crucial experiment proves that what we see, and where we see it, depend entirely upon the physiological functioning of our body." Since the same remarks apply to all other forms of sense experience, the truth that our personal experience of Nature is mediated by our bodies is indisputably clear. It is, therefore, of the first importance to have some understanding of the body-mind relation.

Firstly, the human individual is one fact, body and mind—a unity. In the second place, the functioning of our body has a much wider influence than the mere production of sense-experience. One of our fundamental experiences is of the derivation of emotion from bodily functioning. For philosophy, therefore, it is basic to recognize that the whole complexity of mental experience is either derived from the functioning of the body or modified by it.

But our immediate experience also claims derivation from another source. This second source is "our own state of mind directly preceding the immediate present of our conscious experience." We are aware that our present state of mind is a continuation of an earlier state. In mental experience there is a transition from one state to another, and the later is a fusion of new elements provided by our bodily functionings with the elements of experience provided by the state of our mind in the *immediate* past.

Thus the ego claims two sources of derivation, viz. the body and the antecedent experiential functioning. But there is only one ego which is a synthesis of the body and the stream of experience. Body and soul are inescapable elements in our unitary being, but neither body nor soul are to be so sharply defined as at first sight they appear to be. For example, the body is a complex unity of happenings within the larger field of Nature. As a structure of molecules, it is of its essence that it should always be losing molecules and gaining molecules. In fact, there is no definite boundary to determine where body ends and external Nature begins. In other words, body apart from its environment is an abstraction.

It is true that when we think of our self-identity we are inclined to emphasize the continuous stream of experience which we call the "soul" rather than the body; but the notion of soul is vague in the extreme. Consider the *continuity* of the soul. "So far as concerns consciousness, it has to leap gaps in time. We sleep or we are stunned, and yet it is the same person who recovers consciousness. We trust to memory, and we ground our trust on the continuity of the functionings of Nature, more especially on the continuity of our body." But this is to admit that Nature in general, and the body in particular, provides the material for the personal endurance of the soul. The soul cannot be separated from the body, and the body cannot be separated from Nature.

The Task of Philosophy.—Now that the implications involved in the notion of soul and body have been stated, we are in a position to see what is the task of philosophy. It is "to conceive the happenings of the universe so as to render understandable the outlook of physical science and to combine this outlook with those direct persuasions representing the basic facts upon which Epistemology must build." In Whitehead's view, Epistemology has been weak in the past because it has based its investigations upon a narrow formulation of sense-experience. By doing so, it excluded all the fundamental factors constituting our experience. Philosophy, which is an attempt to make the universe as a whole intelligible, cannot hope to succeed if its epistemology is limited to the narrow field of sense-perception.

The External World and the Soul.—If we ask the question—What is the function of the external world for the stream of experience which constitutes the soul? the answer given by the author is this: "The experienced world is one complex factor in the composition of many factors constituting the essence of the soul." Since our emotions, purposes, and enjoyments are just the soul's reactions to the world which lies at the base of its existence, it can in one sense be truly said that "the world is in the soul." This, however, is only one side of the complete truth. The other aspect is the soul as one of the components of the world. "In any occasion of experience, the world is included within it in one sense, and the occasion is included in the world in another sense." It is important to elucidate a little more in detail this rather baffling relation between body and soul, body and Nature, Nature and soul. We may, for example, regard the soul as nothing else than the stream of successive occasions of experience. From this point of view, at any one moment I am the person embodying the totality of antecedent occasions. This, however, is only one side of the picture. It is equally the case "that any immediate occasion of experience at the present moment is only one among the stream of occasions which constitute my soul." Again, from one standpoint the world for a percipient is nothing else than the functionings of his body, and knowledge of the world an analysis of these functionings. From another standpoint "the body is merely one society of functioning within the Universal Society of the World." That is to say, we are constrained to interpret the world in terms of the bodily society, and the bodily society in terms of the world.

The Doctrine of Immanence.—From what has been said, there emerges a view of the world as a community of actualities interpenetrating one another. Each event is a factor in the nature of every other event. The whole antecedent world of occasions co-operate to produce an entirely novel occasion, and each novel occasion conditions in an important way its successor. This view of the universe involves, as the author maintains, a doctrine of immanence. Indeed, he thinks that only upon such a doctrine can any intelligible notion of causation be given. Why do events have a determinate status relative to each other? The answer is because "each occasion presupposes the antecedent world as active in its own nature." Why are the qualitative energies of the past combined into a pattern of qualitative energies in each present occasion? The answer is the same. Because the antecedent world functions in the creation of a new occasion. This immanence of the world of antecedent occasions in the creative advance is fundamental. "It is the reason for the transfer of character from occasion to occasion. It is the reason for the relative stability of laws of Nature. . . . It is the reason why, in the direct apprehension of the world around us, we feel that curious habit of claiming a twofold unity with the observed data. We are in the world and the world is in us. Our immediate occasion is in the society of occasions forming the soul, and our soul is in our present occasion. The body is ours, and we are actively within our body."

The Ego.—The preceding discussion has brought together the conclusions of modern physical science and the deepest persuasions dominating human life in its social functioning, as well as in its literature, art, and religion. As a result of the analysis a clearer knowledge of the nature of the personal ego emerges. The "I" of which we are conscious is not bare thought (as Descartes suggested), but is a unity of emotions, enjoyments, hopes, fears, valuations, decisions, and all of these experiences are subjective reactions to an active environment. That is to say, the unity of the ego consists in the process of shaping a multiplicity of material presented by the environment into a consistent pattern of feeling, and its individual enjoyment is what it is in its rôle of a natural activity moulding the activities of the environment

into a new creation. "If we stress the rôle of the environment this process is causation. If we stress the rôle of any immediate pattern of active enjoyment, this process is self-creation. If we stress the rôle of the conceptual anticipation of the future, whose existence is a necessity in the nature of the present, this process is the teleological aim at some ideal in the future.

Nature and its Content.—We are now in a position to answer the question what content must be added to the notion of Nature as bare activity? It is clear that "life" is the content that must be fused with activity if we are to have a concrete conception of Nature. But life must be distinguished from "mentality." Mentality involves "conceptual" experience, "which is the entertainment of possibilities (*e.g.* alternatives) for ideal realization in abstraction from any sheer physical realization." Life, however, lies below this grade of mentality. It is the enjoyment of emotions derived from the past, and aiming at the future. The experience of emotion has what is called a "vector" character as its essence. That is to say, there is a receiving from the past, an enjoyment in the present, and a passing on to the future. Moreover, in every occasion of experience there is a union of transcendence and immanence. "The occasion is concerned in the way of feeling and aim with things that in their own essence lie beyond it, although these things in their present functions are factors in the concern of that occasion." Indeed, in virtue of the general community of occasions, each occasion in its self-creation is concerned in some degree or other with the universe.

Nature, then, in the author's view must not be divorced from "life" as defined by him. It consists of individual occasions which are in fact emotional unities. Each actual entity is a patterned texture of qualities always shifting as it is passed on into the future. The conspiring of the occasions of the past to form a novel occasion in the present is the creative advance of Nature. In the realm of inorganic nature studied by the physicists and chemists there would seem to be little or no conceptual mentality. Mentality is latent only, and novel sporadic flashes would seem to be inoperative. In inorganic nature the grand patterns pervading the environment are received and transmitted by each occasion with little, if any, novel change. As the author has said elsewhere, the occasions of inorganic Nature receive their inheritance, and proceed to store it in a napkin. But the various grades of the higher forms of life exhibit the effectiveness of mentality in a scale of degrees. The social habits of insects and the lower animals point to flashes of mentality in the past which have degenerated into physical habits. In the higher mammals mentality is seen to be an important factor in the direction of life. In man mentality is the ground of his entire world of systematized knowledge. If it be asked what is the peculiar rôle of conceptual activity in the scheme of things, Whitehead replies that the qualities entertained as objects in such activity may be regarded in the nature of catalytic agents as conceived in the science of chemistry. "They modify the aesthetic process by which the occasion constitutes itself out of the many streams of feeling received from the past." In other words, conceptual qualities possess the power of diverting the flow of energy, and by holding up mere "tradition" enable nature to escape from the rôle of repetition to create genuine novelties.

This brings to an end the outline of Professor Whitehead's latest book. It will be seen that the author claims that Nature must be interpreted as a living creative process having both goals and values, a doctrine which focuses many converging trends of scientific thought, and at the same time provides a philosophical justification for the intuitions of poets and mystics.

THE EDITOR.

PHILOSOPHICAL SURVEY

PHILOSOPHY IN ITALY.

(PLATONIC STUDIES)

PLATONIC studies continue to be cultivated, even in Italy, with undiminished fervour. And in Italy, as in England and Germany, interpretation tends to pass from one extreme to the opposite. At one time the chief concern of the exponents of Plato was to reconstruct his "system"; and since his thought did not easily lend itself to unification, every effort was made to force it within the limits of a preconceived scheme. The present tendency, however, is to start from the opposite standpoint—that there is no philosophy of Plato, only a variable philosophical activity which is, as it were, consumed in each dialogue in turn, to be rekindled inexplicably in the next. Hence the work of interpretation reduces itself to a summary of the contents of various writings, arranged as far as possible in chronological order, and each examined independently as a complete and self-sufficing entity. The systematic interpreters used to make all the dialogues burn with a single flame, for which is now substituted a series of *ignes fatui* in which the connection is lost, or only visible at intervals.

In a certain sense the reaction of contemporary exponents to the excessively systematic tendency of their predecessors is justifiable and beneficial. In their intemperate zeal for arranging in a single context the exuberant variety of Platonic intuitions, his former exponents used to end by superimposing themselves on the author and by exercising their imagination in bridging the gaps, or even sometimes the chasms, that separated one intuition from the next. On the other hand, the hermeneutic criterion of the moderns which substitutes for systematic continuity the more flexible and active continuity of philosophizing seems at first sight much more appropriate to the subject. But what vitiates it is an unconfessed sceptical presupposition as if Plato's philosophizing were exercised *in vacuo* instead of tending unremittingly towards a systematization of knowledge, though no single systematization could exhaust its activity. Rightly understood, the criterion of the moderns should lead us to the admission, not of a single fixed line embracing the whole Platonic philosophy, but of a number of lines of development, independent of one another to some extent, yet at times entangled together almost inextricably. Yet since the same dynamic impulse runs through all the threads, in the aggregate they give the impression of a single movement. But the perception of these relations requires that the examination of the Platonic writings should not be conducted dialogue by dialogue, considering each one by itself as a detached unit, but by studying the development of each theme and the manner in which analogous themes are related between different dialogues. And it is perhaps here that present-day criticism shows itself most wanting. It believes that the individual dialogues are homogeneous or organic unities, expressing well-defined phases of thought; on the contrary, they are heterogeneous and composite unities often held together by very extrinsic bonds, and the true organic unity is to be sought in the relations of similarity or contrast between the parts of different dialogues. Consequently it can be said without exaggeration that

the progress of Platonic exegesis lies in the breaking of the formal literary unity of the dialogues and the recomposition of the resulting parts on a basis of more intrinsic criteria.

Among the more recent Platonic studies to which we referred at the beginning of this review we note what appears to us an example of the worse tendency alluded to above in a book by Ferro, and, on the other hand, an example of more truly searching interpretation in a book by Stefanini.

Ferro's book[1] is a sufficiently industrious summary, often a textual transcription, of a series of dialogues, arranged according to a plausible chronological criterion now generally agreed on. One could discuss the interpretation the author gives of this or the other controversial point, but with scant profit, because what is lacking in the book is precisely the sense of the problems or themes of Platonic thought that might give value and relief to particular discussions. I cannot see the utility of such summaries; the text of Plato might just as well have been transcribed, and furnished with some annotations. Ferro admittedly states in his introduction that he does not adhere to the sceptical presuppositions of those who refuse to see any systematic coherence in Plato's philosophy, and he promises further volumes in which he will complete the summary of the dialogues that he has left unfinished, after which he will give a synthetic exposition of the system. But in that it appears to me that he will unite the opposing errors of the systematic and the rhapsodical interpreters in his inability to find a *via media* that will surpass them both. The exposition of origins that he has undertaken should have led to the investigation of the systematic motives of Plato's thought, and instead he has let slip this opportunity, confining himself to a passive transcription of the contents of the dialogues. It is to be presumed that a beginning so arid and barren of essential motives must be offset by a correspondingly static systematization, lacking any sense of evolution. This is to unite the two errors rather than to eliminate them.

Far better than Ferro's is Stefanini's[2] book, which likewise contains a partial analysis of the Platonic dialogues (it stops at the *Phaedo*) and is to be completed by a second part, but the specimen of interpretation which it gives is a guarantee of the excellence of the method. Stefanini not only shows himself convinced of the necessity for a criterion of interpretation which shall temper the systematic point of view with the genetic, but he carries it out, studying the dialogues in their mutual relations and continual interferences. Certainly the "dramatic" writings of the first phase of Plato's thought do not afford adequate material for the full scope of this method; still the reader has the definite impression that the interpreter is fully aware of the problems of Platonic philosophy and does not passively echo or abridge the raw material of the contents of the dialogues. In his introduction the author affirms, "anyone who claims to produce a consistent and homogeneous Plato, denuding him of all contradictory elements, succeeds not merely in impoverishing him but in annihilating him, reducing his work to a collection of rhapsodical philosophies, attributed to an imaginary name. . . . To purify Plato of his contradictions is to destroy him" (p. xx). And conformably with this premise he gives us a full and lively review of the difficulties in Plato and the complex spiritual themes that are entangled and unravelled in the sinuous course of the dialogues.

To turn to the more detailed analyses, that of the *Symposium* seems to me felicitous enough. Stefanini brings light to bear upon the conflict that is

[1] A. Ferro, *La filosofia di Platone* (dai dialoghi socratici a quelli della maturità) Roma, Tip. del Seriato, 1932 (octavo, pp. 267).

[2] L. Stefanini, *Platone*, I. Padova, Cedam, 1932 (octavo, pp. lxxxi–318).

there revealed—perhaps for the first time in a definite form—between the two inspirations, noetic and dianoetic, of Plato's thought. Are the ideas the object of an immediate intuition or of a discursive dialectic process? In the first period of Plato's activity the discursive dialectic process had seemed to him the perfect instrument of knowledge. His dissatisfaction with this attitude begins to show itself in the *Meno*, in which it is made plain that reasoning presupposes some fundamental intuitions which cannot be linked with a logical connection. "The *Symposium* marks the completion of a forward step. The function of the *doxa* is no longer merely necessary but begins to preponderate with respect to the discursive process. Eros is the symbol of the *doxa*: the presentiment of truth, knowing antecedent to knowledge, without knowledge" (p. 226). It seems to me right to make this identification between Eros and the *doxa*, which foreshadows the transformation of the concept of the *doxa* itself that takes place in the dialogues of the last phase. But I do not think that the antithesis between Eros-*doxa* and the discursive process is well founded. Rather there is identity between them, even if in Eros the passional force of the *discursus* is more accentuated. It seems to me that the opposition is more marked between the noetic and the dianoetic in the contrast between the pure intuition of beauty and the movement of the erotic spirit that tends towards it (to generate in it). In general the contrast springs from an irreconcilable dualism in the viewpoints of Platonic thought; when it starts from the point of view of ideas the intuitive and noetic attitude prevails, while, on the other hand, when the point of view is that of knowledge, the activity of the mind, the dianoetic attitude prevails, and the *doxa*, which when compared with ideas loses in value, acquires a positive dynamic significance. That is why the dialogues of the last phase, from the *Sophist* onwards, in which the themes of the activity of the mind and of dynamic causality occur more frequently, seem to give the impression of the subordination of the abstract and static idealism of the first phase. Actually for Plato the idea remains always transcendent, but the point of view is changed and the new subject of investigation implies that dynamism which would be foreign to the pure idea.

Even in the *Phaedo* and the *Republic* Stefanini rightly sees a twofold contradictory attitude, both noetic and dianoetic. In an objectivistic conception the discerning faculties ought to conform exactly to the qualities of the object of which they are conscious, so that understanding corresponds to being. Corresponding to the positions of being, not-being, and becoming are knowledge, ignorance, and opinion in the subject. Knowledge can only consist in a pure intuition of the ideas. This, observes Stefanini, is the psychology of the ontologist, who isolates pure intuition from the inferior activities of the soul in order to obtain the exact adherence of the subject to the absolute object. But this is not altogether Plato's position. The objectivistic requirement interferes with the more fundamental and original need to strengthen the subjective element of consciousness (pp. 249–251). These observations are very just, and let us add that it is only from this point of view that it is possible to explain the dialogues of the last phase.

GUIDO DE RUGGIERO.

(*Translated from the Italian by* CONSTANCE M. ALLEN.)

NEW BOOKS

Idealism: a Critical Survey. By A. C. Ewing, M.A., D.Phil., Litt.D. (London: Methuen & Co., Ltd. 1934. Pp. viii + 450. Price 21s. net.)

Dr. Ewing's book is a very long one, with numerous and sometimes very important footnotes. In his conscientious desire to be exhaustive, to be sympathetic, and to be fair, the discussion becomes loaded, possibly overloaded, with arguments, objections, and counter objections, and the central theme is often in danger of becoming lost. In consequence a review presents a most difficult task and must be confined to indicating Dr. Ewing's aim and accomplishment and to a consideration of only a few of the many points raised and discussed.

He sets out to examine idealism in order to discover what is tenable in its position, believing that realists have rejected it in a too wholesale manner and have thrown away much that is vital even for realism. His own position is somewhat that of "meeting extremes" and expresses probably a tendency to which Bosanquet drew attention, and to which Professor Kemp Smith gives expression. The term idealism is not easy to define; and it is not clear why he should use such a phrase as "the term idealist as ordinarily understood in philosophy" and thereby imply that there is any common meaning at all. He refuses to identify with idealism the view that mind or spiritual value is dominant in the universe; for this might be or is maintained by a theism which need not be idealistic; rather what is distinctive of idealism is a type of argument used to reach such a view; and what he undertakes is an examination of this type of argument. Though the idealistic argument may be and is rejected, the validity of the view which it claims to establish remains unaffected one way or the other, for it may be defended by another, non-idealistic, form of argument.

Various forms of the epistemological argument are considered—that *to exist* is equivalent to *to be perceived, to be known,* or *to be experienced,* that the mind plays some part which may be described as *construction,* that relations are internal and knowledge is a relation, that there is a connection between knowledge and purpose (a view associated with Royce); all these, familiar to professing philosophers and to the philosophic reading public, as well as Hegelianism, which Dr. Ewing treats with prudent reserve, are found, when once confusions and ambiguities are removed, to be untenable. There emerges only one point which seems to be idealistically important; it is what is involved in the scientific reference to an *observer* or the reference in cognition to what something *would be* for a mind that is knowing or observing. Even this, however, as Dr. Ewing points out, still leaves an important realist element because of the distinction between the *observing* and *what is observed.*

Kant, because of his influence on idealism and philosophy generally, receives a special chapter in which an attempt is made to decide in what respects he is an idealist, what is and what is not tenable in his theory, and what contribution he made to idealism and generally to a solution of the problems of philosophy. Many of his points are jettisoned. The doctrine of synthetic *a priori* judgment is, fruitfully, reinterpreted as a problem of inference—how conclusions can follow from their premisses and yet give knowledge not already contained in these premisses; his theory of space and

time and intuition, in general leaves no room for inference at all; the mentalism present in his doctrine is discarded; not synthesis but the Kantian idea of synthesis is rejected because it presupposes that sensa are disconnected and that synthesis is an act of the mind; Kant's claim that to regard space and time as appearances enables the contradictions, supposed to be inherent in space and time, to be overcome, is opposed. The contributions of Kant to idealism and to philosophy are enumerated, somewhat summarily, as if Dr. Ewing were smitten with compunction for his critical handling of a great philosopher. Nevertheless, though Kant is an idealist, there is yet, as Dr. Ewing, like Professor Kemp Smith, notes, a realist element in his effort to save the objectivity of the physical world; but his attempt is so full of difficulty that it is charitable to say that he was feeling his way towards a realism within idealism.

The theory that relations are internal, so much stressed by idealists, is discussed in a long and elaborate chapter that unmasks a degree of confusion and ambiguity which constitutes a philosophical scandal and would lead to the condemnation of individuals in other than philosophical pursuits. It raises a topic of great importance for Dr. Ewing's own view. Ten different possible meanings of the theory are enumerated; but most of the idealistic arguments for the various meanings given by idealists to the theory cannot be sustained. Idealists might and probably would refuse to be compromised by the citation of *arithmetical* relations, which Dr. Ewing gives in abundance, and might maintain that they were concerned with relations between concrete existences and not with abstract ratios between numbers. Dr. Ewing might have clarified the discussion by considering whether idealism was seeking to maintain some general doctrine and whether the latter could be examined on general grounds. Was it anxious to maintain that *to be* and *to be related* are equivalent, and was it assuming that there is some relation that is of fundamental metaphysical importance? Stated in this way the theory is seen to be a more general form of the doctrine that *to be* is *to be perceived* or *to be known* or *to be experienced*. There is one fact which idealists may have in view—a fact to which Dr. Ewing draws attention and which, it must be admitted, seems to give support to the theory. It is that many properties of a thing, *e.g.* malleability, fusibility, etc., of gold, presuppose its being related; and it may be that *all* the properties of a thing are similar in this respect, certain factors, *e.g.* constancy, leading us to overlook the possibility. Such a view of a thing, though it might require us to surrender the ordinary notion of a thing, and the idealist identification of *being* and *being related* are full of difficulty and apparently contradictory; most people, like Dr. Ewing, are convinced that something must exist in order to be related. The difficulty in regard to relation is that there are many types of relation; but in view of what idealists say about the whole and its members, the relation seems to be one of logical inferability or one of causal determination, somewhat vaguely conceived. It is possible that most, if not all, of the meanings enumerated by Dr. Ewing are due to some such belief as that the identification in question is self-evident or that *to be* conditions or is conditioned by *to be related* or that *to be* is logically inferable from *to be related* or that *to be related* is logically inferable from *to be*.

Though the internality of relations could not be sustained by the idealistic argument, Dr. Ewing thinks that such a conclusion can be reached by an analysis of causality. The notion of causality is extremely important for Dr. Ewing's criticism of idealism and for his own theory; for it plays a fundamental part in his interpretation of coherence and, through coherence, in his view of physical objects and the universe. His view, stated generally, is that the "regularity" view of causation, though it contains the minimum necessary,

is not adequate; to account for human action and for memory, and to provide an adequate theory of inference, causality must be regarded as an intrinsic or inherent connection, as a relation that involves logical entailment, as an *a priori* feature of the universe, as a category freed, however, of Kant's subjectivism. Causality is internal in the sense (1) that it follows from the nature of its terms, otherwise than mere regular sequence, (2) that it could not have been absent without at least one of its terms being different, (3) that the cause could not have existed without the effect following nor could the effect have existed without being preceded by the cause. Causality, since it involves logical entailment, is internal also in the sense (4) that the nature of one term is logically dependent on that of the other; and for a mind possessing the requisite insight, it is internal in the sense (5) that cause and effect are so related that determinate characteristics of the one can be deduced *a priori* from the other. The relation of causality is also a "generator of internal relations," that is, wherever C causes E, characteristics of C, other than the characteristic of being cause of E, are internally related in the above senses to E or characteristics of E.

The relation involved in knowing does not coincide with the causal relation; it is internal in senses (2) and (5), and, if epistemological idealism is assumed on other grounds, in senses (3) and (4). This means that the theory of internal relations does not support epistemological idealism and hence that what is known exists independently of being known. The nature of this relation is examined more fully in a discussion of coherence as an account of the nature of truth. The ideas of correspondence and of coherence both have difficulties; but Dr. Ewing seeks to give an interpretation of correspondence which he considers essential to the meaning of truth and which is better expressed by the phrase "in accordance with." In a discussion of coherence as a criterion of truth Dr. Ewing contends, rightly, that coherence is used as a test; and he enumerates the contributions of the coherence theory in this connection. In both discussions, however, he is adopting a realist attitude which is not present in the idealistic theory of coherence; for idealism seems to deny that a "fact" is anything else than an interpretation dependent upon and coherent with a system of interpretations, that, in short, *to be true* is *to be related to a system.*

The third topic under coherence is reality as a coherent system. Many confusions have to be cleared away. In particular the doctrine of degrees of truth has been held (1) to follow from the coherence theory of reality and the internal theory of relations, and (2) to be absurd. Its absurdity was thought to condemn the coherence theory. Dr. Ewing maintains that this condemnation is not involved because the doctrine of degrees of truth does not follow from that theory; but this seems to be the case only because he has adopted a more realist position. Is reality, then, a coherent system? A coherent system, as defined by Dr. Ewing, is "a set of propositions in which each one stands in such a relation to the rest that it is logically necessary that it should be true if all the rest are true, and such that no set of propositions within the whole set is logically independent of all propositions in the remainder of the set." What is important for the idea of coherence is that there should be no two or more systems of propositions logically independent of each other. In defining logical independence Dr. Ewing says that two sets of propositions are logically independent when no proposition in one set either entails or excludes . . . any proposition in the other set. The word *excludes* is obscure and troublesome and seems to mean exactly the opposite of what he intends to mean. The weight of his argument is really upon "logical entailment"; and, granted that his view of causality is accepted or that the coherence theory of the criterion

of truth is valid, it follows that the universe is a coherent system. But so interpreted the theory does not entail idealism, for it does not follow that what exists could not exist if it were not known. In a section dealing with rationalism and empiricism, where it is maintained that the difference between them turns not upon whether our ideas have all been derived from experience but upon whether and how far synthetic *a priori* knowledge is possible, this being a problem of inference, he argues, against the prevailing tendency to make all inference analytic, that there are synthetic inferences and that hence there are relations of logical entailment, as has been rightly assumed by the advocates of coherence, between different facts in the real world.

The first point in this theory that may be considered is the argument for causality. Some of the points made against the "regularity" view are not convincing. We do not refute the view that the earth moves round the sun by saying that it makes nonsense of people's remark that the sun rises and sets; and so with the "regularity" view and the statement that something occurred because I willed it, unless the latter statement is based upon insight into connection other than regular sequence. The argument from memory does not carry one very far in the absence of any clear understanding of memory. Since Hume's time, however, discussion on causation has linked the latter with inference. Hume was interested, primarily I believe, in the question: on what grounds do we proceed to form and to *believe* a general proposition on the basis of instantial evidence? But, secondly, he denied that the principle of causation or the principle of the uniformity of nature was the ground or could guarantee the certainty of our general conclusions: and, thirdly, he put forward a theory of his own, whether satisfactory or not is irrelevant at the moment. Kant did not meet Hume's difficulty by arguing for causality in the universe; he had to show, what he never did, that any specific generalization must be true because that principle is valid and that it is the basis of the inference. Kant seems to have clung to the belief in the mental character of the *a priori* because he thought, mistakenly, that certainty was thereby somehow guaranteed. But Dr. Ewing rejects this feature of the *a priori*, causality being for him a purely objective character of the universe; he maintains that there are relations of logical entailment between facts in the real world; and he admits, what is supported by the fact of so much controversy about causality, that it is not discovered. It may be admitted, with Dr. Ewing, that something may entail something else, even though no human mind knows these somethings. Nevertheless, inference requires both logical entailment and knowing it; and strictly, therefore, in inference the relation must be known; otherwise we could never say that our inferences are logically necessary. In fact, according to Dr. Ewing, what we know is the important thing, for "our premisses are not the objective facts as such, but only what we know about them before making the inference." The cards, as it were, must be all on the table. If, however, inferences are logically made and if they are made on the basis of the data before the mind, and if causality is not known, then inference is not dependent on causality, but is obviously dependent on something else. Dr. Ewing writes in places as if the causal and the logical were distinct. It is possible, however, to hold that logical relations are not a class of relations additional to the types of concrete relations discovered in the real universe but are properties of the latter and that inference depends on them. But this view simply reinforces the conclusion that the fact of even legitimate scientific inference provides no basis for Dr. Ewing's (or for Kant's) argument for causality, for it is impossible to know whether causality possesses logical entailment if we do not know the relation in question. It is probable, therefore, that Dr. Ewing has only argued for what he takes causality to mean and what

it would imply if it were a feature of the real universe, and that he has not shown that it is actually such a feature.

A second point is Dr. Ewing's view of reality as a coherent system. Its relation to the idealist view is not easy to decide, mainly because the latter is full of obscurity, but partly also because of his own exposition. He seems in places to be maintaining that a term's *being* is not exhausted by any one relation and to be denying that all relations are of such a kind that a term's *being* is exhausted by all relations. Thus for him *to be* and *to be related* are not identical; and he would be upholding a less general position than that of idealism. He says, however, that a consequence of the coherence theory, this being here assumed to be his own theory, is that no physical object we know could have been what it actually is in a universe in which no minds ever existed or were ever going to exist. Are we entitled to suppose that a thing might have been different and yet be that thing? If we are not, then the position is that *to be* is to be related in a system of which minds are actual or potential members, or that the being of a thing is dependent on a system or the whole; and this is very close to what idealism was probably arguing for. It so happens that Dr. Ewing defines idealism in epistemological terms.

In the discussion on physical objects, the main problem concerning which might have been more clearly and definitely stated, it is maintained (1) that the phenomenalist view (in one sense of phenomenalism), that all our ordinary statements about physical objects can be analysed into statements about sensa must be rejected and that phenomenalism fails to meet at least eight conditions which any theory must satisfy; (2) that a representative theory of knowledge is to be distinguished from a representative theory of perception, and that knowledge may be direct although perception may be representative; (3) that the fact of illusions in particular favours the representative view of perception; (4) that the belief in independent physical objects can be defended by means of the idea of a direct or non-inferential cognition, by a causal argument to the effect that we are driven to assume and search for some cause of our sensa, this cause not being experienced by us and consequently the characteristics assigned to it being the characteristics of the objects immediately experienced (*i.e.* mental states and sensa), by the argument that the belief renders experience coherent, and by an argument from "inverse probability" to the effect that experience goes on and has gone on so long as if there were independent physical objects resembling our normal sensa and that the probability of the belief seeming to be true without being so is so small as to make the hypothesis a reasonable one. Dr. Ewing is too alert to overlook the difficulties involved, and would only claim to be formulating the best possible case for the belief.

The idea of a non-inferential cognition has been sponsored by others and possibly even by Descartes (Med. ii); but when taken in conjunction with the view that a physical object is a group of unsensed sensa, it provokes the question, what is it that is cognized? A more general difficulty is presented by the term sensa and by the causal argument in this connection. One is apt to get lost amidst references to sensa, unsensed sensa, objective sensa, sensible qualities, secondary qualities of sensa, and so on. Dr. Ewing says that "sensa are not qualities"; and it is clear that if a sensum exists only so long as one perceives it or if it is dependent on some mind, and if a quality of an object persists even when we do not perceive it, a sensum cannot be a quality of an object; and if this is true of sensa and if physical objects are groups of unsensed sensa, it would seem that physical objects do not persist nor exist independently, unless the term sensum is being used with a double meaning. The adoption of the representative view of perception leads him, in order to defend

the possibility of knowledge of objects, to argue that the sensa we have represent sensa similar to themselves and that we can accept this if we hold that our sensa are caused by unsensed sensa similar to themselves. In view of our experience of so-called causes it is not necessarily the most reasonable conclusion that there is this similarity. Does the fact of illusions in particular necessitate the adoption of a representative theory? Much depends upon the way in which the problem is understood. What is not clear is why Dr. Ewing should hold that our sensa are caused by and represent sensa similar to themselves. The evidence seems strong that physical objects are not perceived directly and hence that sensa are not directly perceived to be qualties of objects. But it still remains possible that the qualities are among the sensa we do have or that some of our sensa are qualities of objects, and that they are not merely similar to unsensed sensa or caused by them. Ordinary men do believe that much that they sense are qualities of objects and not merely representative of them. The fact of illusions points to a distinction between sensa that are and sensa that are not qualities of objects and the problem that arises is as to how this distinction is effected.

A final chapter, after a preliminary commendation of Berkeley, proceeds to examine various arguments of a metaphysical nature, propounded by idealism, in favour of the view that whatever exists is dependent on or must be experienced by a mind or must be of the nature of experience, and that such a mind must be a non-human mind. Dr. Ewing rejects the argument, based on the belief that the nature of relations implies mind, that, as finite existences stand in many relations of which no one is conscious all the time or at all, there must be a non-human mind which apprehends them, for he refuses to admit the implication asserted. He rejects also Absolutism and Panpsychism; and he rejects the argument that the nature of universals and values requires a divine mind to be postulated for which they are present. His discussion here is very valuable in view of the stress which idealism has laid upon value and because idealism, though largely through historical accident, is associated in the minds of many with value. He formulates what he himself considers the most commendable idealistic view: granted that physical objects exist independently of human beings and that they are yet dependent on a mind, it follows from these two propositions together that they are dependent on a non-human mind. This position is very close to theism. It is, however, difficult, in view of the first proposition, to establish the second; and Dr. Ewing can find no evidence for accepting the argument. The conclusion he reaches is that the attempt to prove the existence of a divine mind by specifically idealist arguments has failed. This does not mean that he rejects the belief in a divine mind, but only the idealistic approach to that belief. He is prepared, he states, apart from certain considerations, to accept the view not specifically idealistic but theistic, that the order and system so prominent in the world we know strongly suggest the presence in some fashion and sense of a mind controlling the universe; but this view is not elaborated.

Many points in Dr. Ewing's detailed and exhaustive discussion have not been touched upon, and probably those that have been noted may have been misunderstood. Readers, however, will find the volume informative and valuable, even if only as a storehouse of arguments. The analysis of questions and of different possible meanings, which no doubt reflects the influence of the Cambridge mode of philosophizing, while it may seem tedious, justifies itself in revealing the obscurities of philosophical systems. Though to philosophical philistines the result may appear to be a very effective "debunking" of philosophical speculation in view of the daring constructions that have been reared on linguistic ambiguities and erroneous conclusions, yet to

philosophers discussing philosophical secrets among themselves it is a very important work in clearing away much misunderstanding, misinterpretation, and bad reasoning committed by very eminent thinkers.

B. M. Laing.

Introduction to Green's Moral Philosophy. By W. D. Lamont, M.A., D.Phil., Lecturer in Moral Philosophy, Glasgow University. (London: George Allen & Unwin Ltd. 1934. Pp. 224. Price 7s. 6d.)

Only one who has felt the difficulty of Green's *Prolegomena to Ethics* (partly due to his not having had the opportunity of revising it for publication, but partly also to its inherent difficulty) can fully appreciate the simplification of it that Dr. Lamont achieves in this volume. Only one who for the last forty years has merely had occasion to refer to particular passages can fully appreciate the multitude of things, both old and new, that he succeeds in bringing forth from it. He claims for it that "from the historical point of view it is undoubtedly the greatest treatise on Moral Philosophy produced by the British school of Idealism." And, going back upon it, even with Bradley's genius-lit *Ethical Studies* in mind, one is inclined to agree with him. It is certainly astonishing how well it wears; and I can think of no more excellent discipline for a generation, pampered with text-books on Ethics, than to be sent back to Green's massive pages under so reliable a guide. Agreeing, as we must, that edification is no part of a philosopher's work, we may yet regard it as an advantage that, as Dr. Lamont puts it, "students of the subject have here the character of a great citizen occasionally falling under the keen scrutiny of a great philosopher." The exposition falls into three parts: the first on "The Psychology and Metaphysics of Morals," corresponding to Books I and II in Green; the second on "Moral Theory," corresponding to his Book III; the third on "Moral Theory and Moral Practice," corresponding to his Book IV. To these is added a critical Appendix, consisting of six "Notes" on "The Metaphysic of Knowledge and Nature" and of "The Good Will"; "The Conception of Reality as a System of Unalterable Relations"; "The Concept of Evolution"; "On Effects, Intention and Motive"; "The End as Common Good." In the expository portion occupying the main body of the book, the author has rightly allowed himself considerable latitude of statement and illustration, sometimes with very happy effect. Particularly good seem to me his treatment of character and circumstance, of motive and intention, of the meaning of good, and of the relation of moral theory to moral practice. But it is to the critical "Notes" that the reader familiar with Green will turn with the greatest interest. Many points here invite comment. I have only space to mention the fundamental one of Green's metaphysical basis. I think that Dr. Lamont is here right in emphasizing the distance that separates Green from the subjectivism which threatens Kant's doctrine of the place of the Understanding in "making" nature, though he might with advantage have noted that it is Erdmann and not Kant who is responsible for this phrase and for the distinction between "making" and "creating." He is, I think, further right in noting the ambiguity in Green's metaphysical basis, arising from the two lines of argument by which he tries to establish the existence of a spiritual principle in nature: that from the relation of subject and object in knowledge, and that from the relation of matter and form in reality. My only doubt is as to the way in which Dr. Lamont conceives of the order in Green's mind of these arguments. I agree with him in holding that the latter, taken in the sense of the implication in all spiritual activity of the idea of an as yet unattained, perhaps to

finite beings, as finite, unattainable, totality and unity is the real heart and soul of Green's metaphysics. I merely question the accuracy of describing it as his "real," in the sense of "actual," starting point (p. 184). Is it not that towards which, in spite of his actual epistemological starting-point, the deeper logic of his thought was driving him? Is it not this that makes his position so interesting as transitional between an Idealism founded on a theory of knowledge, like that of the neo-Kantians, to one founded on a theory of value such as we have in Bradley and Bosanquet? To have recognized this more clearly would, I think, have enabled Dr. Lamont to do more justice to Green's doctrine of Relations and his implicit recognition of a supra-relational aspect both of knowledge and reality; perhaps also to his definition of the Good Will, as indeed a circle but not a "vicious" one, and of the General Will as involving an implicit recognition on the part of individuals of a common good which is the ground of all *de jure* rights and duties. But I do not wish to end this notice in a key, even though a minor one, of criticism. I will therefore conclude by saying that in giving us this book the author has pretty well "told me my own dream" as to the meaning and place of Green's work in Moral Philosophy.

J. H. Muirhead.

Liberty and Natural Rights. By W. R. Inge, Dean of St. Paul's. The Herbert Spencer Lecture delivered at Oxford, May 9, 1934. (London: Oxford Clarendon Press, Humphrey Milford. 1934. Pp. 38. Price 1s. 6d. net.)

"I confess," writes the author, "I have been amazed and appalled by the total and almost unresisted destruction of liberty in one great European country after another. I could not have believed, twenty years ago, that such a thing was possible." The invitation to deliver this lecture has given him the opportunity of making a notable pronouncement upon the subject of the value of liberty to civilization and the danger we run of losing it, so soon as national unity is sacrificed to irreconcilable class divisions. "Democracy," he truly says, "can exist only in a society in which conflicts are not *à outrance*." Speaking of Herbert Spencer at the beginning, he pays eloquent tribute to the generosity and truth of his "two fundamental convictions—his hatred of war and his love of liberty." But he is not blind to his mistakes. While Spencer saw "that the nemesis of militarism is the loss of liberty and vice versa," he did not see that militarism and industrialism may be parallel forms of the same type of society, and that, in the first half of the nineteenth century, "unrestricted *laissez faire* instead of promoting individual liberty was destroying it as effectually as a military despotism." On these grounds Dean Inge rejects the teaching of Spencer's *The Man versus the State* in favour of that of Mill's *On Liberty*, "one of the great little books of the world," which he recommends as the best antidote to the fascination which the alternative of Dictatorship is at present exercising on the younger generation. The review of ancient, mediaeval, and modern theories of natural rights which follows is a delightful mixture of the erudition, wisdom, and wit we have learned to expect from the Dean of St. Paul's. What could be wittier than the statement (in reference to Spencer's unbounded hope for the future) that "Hegel might not have accepted it since his absolute had already realized himself quite creditably in Prussia"? or than the reply to James I's defence of the doctrine of the divine right of kings on the ground that even a bad one may have been inflicted upon

a people for their sins: "The English people ended by deciding that, sinful though they no doubt were, they had not deserved the Jameses"?

But while offering hearty thanks for this "great little" tract, in writing a notice for *Philosophy* and recalling all that has been written since 1858 in the relation of the State to the individual, I confess to a certain disappointment. With all the admiration which we share with Dean Inge for Mill on Liberty, we feel bound to ask, as has often been asked by writers who are neither Spencerians nor Hegelians, whether in the crucial fourth chapter "Of the Limits to the Authority of Society over the Individual" there is any real light to be found in the wholly illusory distinction, which Mill tries to draw, between other-regarding acts which are a legitimate object of interference by the State and self-regarding acts which are not. The lecturer himself on p. 32 shows how the appeal to an abstract Law of Nature in Mill's hands fails to give any guidance on a number of practical problems such as the right of the State over the property of individuals in time of peace, over their lives in time of war, over their right to spread poisonous opinions or to sell poisonous drugs. He even notes the absurdity of Mill's approval of restrictions on the latter while he hesitates over opium. In particular one misses in the lecture any allusion to the book, which for a generation has been widely recognized as containing precisely the correction of the abstractions both of Mill and Spencer: the late T. H. Green's *Lectures on Political Obligation*. I am not myself sure that we can to-day unreservedly accept Green's conclusions in special points of the function of the State. What I am sure of is that his definition of its general function, as that of maintaining the essential conditions of the good life among "equals and likes," is a great advance on Mill's, and that in any attempt to get at the root of so important a matter we cannot afford to ignore it.

J. H. Muirhead.

The Essence of Plato's Philosophy. By Constantin Ritter. Translated by Adam Alles. (London: G. Allen & Unwin, Ltd. 1933. Pp. 413. Price 16s.)

It is well that the fruits of Professor Ritter's lifelong study of the Platonic writings should be made available at last to English readers. If choice had to be made between his two books it is probable that this was the better to choose. For it may be presumed that those who need his longer two-volume work have sufficient German to be able to use the original, and this shorter book, which in German bears the title *Kerngedanken der Platonischen Philosophie*, is intended for a wider public and demands no knowledge of Greek. Among English readers also it should appeal to all who are genuinely interested in philosophy.

In substance the book is neither an attempt at a systematic digest of Platonic doctrine, nor an account of Plato's development. Again, it is not, like Professor Taylor's standard book, a review of the dialogues *seriatim*. For Dr. Ritter, as for many students of Plato, the dialogues seem to fall into two main groups, which merge into one another at the time of the composition of the *Republic* and the *Theaetetus*. At this time, it is implied, Plato really began to find himself as a philosopher: what precedes, whether "Socratic" or not, is preliminary. If we are to find a body of doctrine which can be reasonably called Platonism, we must find it in the later dialogues. Therefore Dr. Ritter reviews the earlier dialogues briefly and in sequence under the two heads "Ethics" and "Ontology" in Part I, closing the series in the first

case with the *Republic* and in the second case with the *Theaetetus*; and Part II, while not neglecting the chronological order, presents a more systematic aspect, and constitutes more than two-thirds of the whole work. In this Part the doctrine of the later dialogues (from which the *Republic* is not altogether excluded) is digested under the headings "Epistemology and Ontology," "Logic," "Philosophy of Nature," "Ethics and Politics," "Philosophy of Art," "Thoughts Concerning God." Thus the book lays most emphasis on the later dialogues; and this emphasis has its value for the English market, in which the middle period represented by the *Republic* and the *Theaetetus* is apt to be given perhaps excessive prominence.

The book is evidently intended as a contribution to philosophy rather than to the history of philosophy. Little space is devoted to Plato's predecessors or contemporaries. The Platonic doctrine is not presented primarily as a solution of problems that agitated the society in which it was born, but rather as a contribution to *philosophia perennis*. "To me," writes the author in his concluding words, "he is a philosopher second to none; an artist of first rank; a man favoured by God as few others have been; unforgettable for all time; releasing spiritual powers which have been a blessing to many and which will continue to be a blessing for all time." This sentence represents faithfully the spirit of the book. A critical reader may feel at times that the author is inclined to gloss over an error or exaggeration—I feel this myself, for example, when Dr. Ritter discusses Plato's attitude to empirical investigation—but he will be glad to be introduced to Plato by a writer whose wholehearted admiration for his subject does not allow him to surrender lightly any cardinal Platonic position.

It should be emphasized that this is a book for students, not a mere appetizer. Dr. Ritter is not a popular expositor, as the term is understood in England and America. His criterion of selection is not the interests of the general reader but philosophical significance, and therefore he is not always easy reading. But for students of philosophy, whether Hellenists or not, the book will be most valuable, and to all such it can be confidently recommended. It is, in fact, a highly concentrated extract of Platonism, representing the considered view of a most accomplished student of Plato's writings, and it deserves careful and repeated perusal.

J. L. Stocks.

S. T. Coleridge's Treatise on Method as Published in the "Encyclopædia Metropolitana." Edited with Introduction, Manuscript fragments, and notes for a complete collation with the Essays on Method in *The Friend*, By Alice D. Snyder of Vassar College. (London: Constable & Co., Ltd. 1934. Pp. xxvii + 92. Price 6s. net.)

The *Treatise on Method* is the sole surviving relic of what Miss Snyder calls one of Coleridge's "most dramatic intellectual adventures." Unfortunately it was in his own eyes a somewhat damaged one, seeing that, besides being his only contribution to an enterprise in which he had hoped to play a much larger part, it had been so "bedevilled" by the editor of the *Encyclopædia* for which it was written as the Introduction that he was fain to disown it, and use the matter of it for another purpose. It is the extent of the "bedevilment" that, in the absence of any trace of the original manuscript, constitutes the problem which an editor has to solve by a careful comparison of the text with that of the corresponding sections of *The Friend* where this matter reappears. Miss Snyder has added to the deep debt which students of Coleridge's prose works already owe her by performing this task

in a manner that seems to me to leave nothing to be desired. We have in her book what is likely to be the classical edition—the tenth as it would seem of the *Treatise* in one form or another. Odd that we should have had to wait for it for a century after Coleridge's death! One reason is doubtless the one already indicated. We have in *The Friend* (Sec. II, Essay iv following) all that is of philosophical interest in it as an application to the problem of Method of the particular blend of Platonic and Kantian philosophy which we have been learning more respectfully to associate with Coleridge's name. But besides this philosophical interest there is an historical and biographical interest attaching to the matter in its original setting. It is not perhaps likely that it was he who first proposed the new *Encyclopædia*, although credit is given to him for this by the publisher of the 1849 edition of the completed work. But he recognized more clearly than most of his contemporaries the profound changes that were taking place in the early years of the new century, not only in men's political institutions but in their whole outlook in science and philosophy. Alone almost in England he realized the issues that were at stake and the importance of permeating the new enterprise with the constructive aims of the Spiritual Realism of which he and his disciple J. H. Green were the leading exponents. It was this and the opportunity it offered to issue a counterblast to the destructive materialism, as he conceived it, of the French Encyclopædists that consoled him for having to put aside the "opus maximum" on which he was engaged for what otherwise would have seemed to him merely hiring himself out as a job writer and compiler. Even in the garbled form in which his Introduction has survived it is still possible to feel the breath of the inspiration with which it was first conceived and written, and which is enough to secure it a permanent place among his most characteristic philosophical utterances.

J. H. Muirhead.

The Unitarian Movement in the Religious Life of England. I.: Its Contribution to Thought and Learning, 1700–1900. By H. McLachlan, M.A., D.D., F.R.Hist.S. (London: George Allen and Unwin Ltd. 1934. Pp. 317. Price 10s. 6d.)

Principal McLachlan has collected a valuable mass of material showing how extensive has been the Unitarian contribution to thought and learning. Biblical scholarship, education, periodical literature, doctrine, philosophy, history, and biography, and belles-lettres are treated in this order.

The special characteristic of Unitarians has been their faith in man and their willingness to submit their beliefs to the test of reason. But reason cannot work if the results are prescribed beforehand. So Unitarians came to adopt the method of freedom from religious tests.

The first results of this freedom are seen in the section on Biblical scholarship. Till the middle of the nineteenth century Unitarians, like all Protestants, accepted the Bible as the ultimate authority in belief. But though they shared this pre-supposition, they were free from others, and this freedom made it possible for them to see the real significance of many facts in the Bible inadequately noticed and to anticipate many results now generally accepted. The details of Biblical scholarship given in this section will perhaps be of interest mainly to Biblical scholars, but the indirect light it throws on the working of the human mind are important. Readers of Philosophy, however, might be advised to leave this section to the last and to begin with the next one, that on education.

This freedom is not negative, and the mind of man works badly unless it is trained. So Unitarians have been zealous in the cause of education. The section on education occupies a third of the book. Nonconformist academies are held in high esteem by competent students. They gave the best education to be had in the England of that time. There was a close connection between them and the Scottish universities, especially Glasgow, during the period called the Age of Moderatism. Members of the Church of England as well as Nonconformists attended them. They did not confine themselves to theological subjects; indeed they showed a special interest in science.

Many of the ministers educated at these academies kept schools, and these schools also provided an education above the average of the day. They experimented in new methods and taught a wider range of subjects. They showed that Catholics, Anglicans, Nonconformists, and Jews could be educated together. Disraeli was a pupil at one of them. One old student, on entering the House of Commons, said that he found more members who had been at Dr. Lant Carpenter's school than had been at Rugby.

Unitarians took a large part in the foundation of the modern universities, and supported them both by personal service and by generous donations.

The philosophic thinking of English Unitarians was dominated by John Locke till the time of James Martineau. They passed through a curious period of determinism, as may be seen in the works of Priestley. But in America William Ellery Channing had been led by Hutcheson and Price to a deeper view of human nature, and he was one of the influences which helped Martineau to break the hold of Locke.

The mention of a few names must suffice to show the quality of the men whose names find place in this book. John James Tayler, James Drummond, Estlin Carpenter, Philip Wicksteed were distinguished by their contributions to more than one branch of scholarship. In literature the names of Hazlitt, Lamb, Leigh Hunt, Walter Bagehot, Mrs. Gaskell, Stopford Brooke find a place; and if only for a time, Coleridge, R. H. Hutton, and Charles Dickens.

The Unitarian hymn-writers are omitted, and the Unitarian contribution to social progress is to be treated in a second volume by another writer.

RAYMOND V. HOLT.

Logic in Practice. By L. SUSAN STEBBING. (London: Methuen & Co., Ltd. 1934. Pp. x + 113. Price 2s. 6d.)

This excellent little book is the latest volume in the admirable series of monographs on Philosophy and Psychology published by Messrs. Methuen and edited by Professor Field. Like all the volumes in the series, it is intended for the ordinary reader, and meant to be of practical value to him in his thinking. Miss Stebbing believes that it is possible to get a habit of sound reasoning, and that a knowledge of logical principles and the practice of attending to them will help toward the formation of this habit. In accordance with her aim she keeps close to matters on which judgment has to be passed in the everyday life of a modern community, pointing out pitfalls, showing how easy it is to let oneself be deceived by plausible language.

In a book of this kind the problem is one of scale and exposition, and a happy choice of illustrative examples is half the battle. Miss Stebbing has done her work very well. The speeches of politicians (unfortunately) are a happy hunting-ground for the finding of illustrations of ambiguity, or indefiniteness, or of obscuring relevant issues; so do (on occasion) the debates of economists. Miss Stebbing has spared the philosophers. There are six

chapters. In the first the writer explains what is meant by purposive thinking. In the next two she deals with form, and the various deductive forms of reasoning. The fourth deals with the ambiguities and vaguenesses to which words and statements are prone, and with the pitfalls involved in irrelevance. The last two deal with the estimation of evidence and the grounds of belief. Though Miss Stebbing does not intend the book as an introduction to logic, on account of her avoidance of technicalities, it should succeed in inducing in readers an interest in logic and logical problems; in this sense it makes a very good introduction to logic.

L. J. Russell.

Scientific Organization in Seventeenth-Century France (1620–1680). By Harcourt Brown, M.A., Ph.D. (Baltimore: The Williams and Wilkins Company. 1934. Pp. 306.)

This is one of the American History of Science Society Publications. Although it is not on the book market in this country, it seems to me to be of such interest and value that attention should be called to it, and commendations offered. The writer must have expended an extraordinary amount of labour upon it; he has a very marked talent for research, and he can present the results in a lucid and attractive form. He traces the beginnings of investigation and conference on a multitude of questions in seventeenth-century France, and indicates its relations to the Royal Society in England. There was an unbounded curiosity, often an amazing credulity; much of the work would from the standpoint of science to-day appear altogether amateurish, although there were outstanding personalities of scientific genius, pioneers of the later developments. The one feature to which attention must especially be called is the cosmopolitanism of these searchers after truth; men of different nations gave one another generous help and encouragement in the pursuit of a common end. It is not for the thoroughly equipped, rigidly disciplined man of science of to-day to despise the day of small things. All who are interested in man's search after knowledge should read this volume, and should try from it to catch the spirit of these early enquirers. There was not in the enquiries definiteness of frontier, or strictness of method, but the most diverse investigations were followed under the comprehensive title of *philosophy*. I write this brief note as I want to share my pleasure with many others.

Alfred E. Garvie.

The Concept of a Limited God. A Study in the Philosophy of Personalism. By Rannie Belle Baker, Ph.D. (Washington: Shenandoah Publishing House. 1934. Pp. xx + 234. Price $3.)

The celebrated dilemma that insists that in view of the fact of evil, God must either be thought of as limited, or else not good, still exercises many minds. Dr. Baker has written a good account of the various philosophies that have chosen to meet the dilemma by admitting the concept of a limited God. She starts with the pluralists, including McTaggart, who, of course, appears as a pluralist rather than as a believer in a limited God, as McTaggart presented the odd paradox of a mind intensely interested in religion, which refused to admit the existence of any God. Other theories—those of Fechner, Renouvier, James, Mill, and Howison are noticed, and the authoress passes

to Personalism. Here she groups some very diverse views, those of Rashdall, Brightman, McConnell, James Ward, and Tennant. Taken as a whole, the book is good, but at times one must judge that Dr. Baker is not fair to those she criticizes. For example, Dr. Rashdall is set down as belonging to those who ascribe " an irrational derogatory limit" to God, and is accused of being "apparently innocent of the Kantian epistemology," which suggests that Dr. Baker is much more "innocent" of the man she criticizes. Indeed, one gains the impression throughout that the strength of Dr. Baker's work is in analysis and description rather than in criticism. She is a convinced theist, and rightly judges that throughout the various types of thought that come under review, there is one main line of reasoning, which, despite many individual divergencies, leads towards a concept of God that gives reality alike to the world and to religion. Her own sympathies lie with the line of thought she expounds, and she has succeeded in bringing together in a synoptic study the chief issues involved in the notion of a limited God, and for this students of the philosophy of religion have reason to be grateful.

E. S. WATERHOUSE.

Outlines of Buddhism. A Historical Sketch. By Mrs. RHYS DAVIDS, D.Litt., M.A. (London: Methuen & Co. 1934. Pp. ix + 117. Price 5s.)

Indian Religion and Survival. A Study. By Mrs. RHYS DAVIDS, D.Litt., M.A. (London: George Allen & Unwin Ltd. 1934. Pp. 96. Price 3s. 6d.)

Of recent years, Mrs. Rhys Davids, in a series of books, has strenuously contended for a view of original Buddhism that, if accepted, must render all the usual expositions out of date. The present book sets forth in brief form what is more fully set forth in the larger books. It is a revolutionary conception of Buddhism. The "Four Noble Truths" are dated in the second and third centuries of Buddhism. The path or way, as a thing of eight parts, is also relegated to later times. Even karma, though in the sense of conduct it is prominent in Gotama's teaching, is relatively of small prominence, it is pointed out, in the Pitakas. The alleged atheism of Buddhism is explained as due to our Western ideas of God as the Great Other, being kept in mind when we are dealing with the Indian habit of thought that sees God rather in than beyond man. The No Soul doctrine is taken as a monkish misapprehension of the teaching that neither the mind nor the body was the self. The essential message of Gotama, as Mrs. Davids reconstructs it, is that man is a becoming rather than a being, and the purpose of this becoming was the working out of the God in man through many lives and many worlds. To imagine that such a becoming ignores God and the soul is to read these terms in a Western sense, not in an Indian. God has never been in Indian thought, the Wholly Other, nor has the self or soul been a property of man.

To some extent the proof of this depends upon a knowledge of the Pali words, which only an expert can possess. Mrs. Rhys Davids, as president of the Pali Text Society, has an authority here that cannot be questioned. She insists that the *bhū* words, words that is to say which come from the verb *bhū*, must be rendered by the verb become, not the verb to be, as the majority of translators have rendered them. But in another respect it is easier for the ordinary reader to grasp the force of the contention that Buddhism was not a break-away from Upanishadic teaching in the way it is often said to have been. It did not introduce a new moral code to India. It gave the accepted code a positive form and an immensely greater importance, not simply as a warning to evil-doers, but as a guide to right, a way of becoming,

in man's quest for the uttermost. Buddhism must be understood in the light of its Indian background. Teaching which, on such matters as God and the self, flouted the most characteristic and innermost habits of Indian thought could not have sprung from an Indian mind, nor have made its appeal to Indian minds. Here one thinks the probability of Mrs. Rhys Davids' contentions is strong. The degeneration of Buddhism came in the later days when the monks read the teaching in terms of their own lives, much as the monastic theologians of a later day read into the Galilean gospel that which never entered the mind of Jesus, or even of St. Paul.

The present reviewer at least is convinced that in its main positions the representation that Mrs. Rhys Davids gives of original Buddhism is much more likely to be true than the traditional presentation. It is to be hoped that this little book will do something to convince students of the religions of the East that Buddhism had a better gospel to proclaim than the pessimism of the traditional dogmas, and that though it failed to maintain the original teaching, it was in itself a message that brought to man a realization of his own divine nature working upwards from the More to the Most.

In the other book, Mrs. Davids treats the same problem, that of the original teaching, from one particular aspect, that of survival. It thus forms a supplement to the general argument, giving in detail due consideration to a very important doctrine. If the view upheld above be true, it follows that to Gotama survival meant fresh opportunities of growth, of becoming, not the utter silence of the Void. Moreover, such survival meant a survivor. The reasons given for this must be read to be appreciated, but the whole argument is suggestive and convincing. There are indications that Mrs. Rhys Davids is establishing her point of view amongst many who are interested in the Comparative Study of Religion. At least, no one must now assume the traditional views of Buddhism without first facing and answering this powerful challenge.

E. S. Waterhouse.

Secret Ways of the Mind. By W. M. Kranefeldt. Introduction by C. G. Jung. Translated from the German by Ralph M. Eaton. (London: Kegan Paul, Trench, Trübner & Co. 1934. Pp. xl + 188. Price 6s.)

The translator contributes a preface which is definitely pro-Jungian in tone, and this is followed by an introduction by Dr. Jung himself, in which he points out the contrasts between his own theories and those of Freud and Adler. He expounds the fact that each bases his psychology on one "instinct," sex and self-assertion respectively, and expresses the view that, inasmuch as there may be and probably are other instincts, other psychologies might be formulated which would fit the facts, or some of the facts, as well as do these. He then summarizes his own teleological point of view and his conception of the unpersonal unconscious from which each individual may be influenced to his detriment or advantage as the case may be.

The first chapter of the book proper is devoted to a short survey of the work of those (mostly French) authorities who were specially interested in hysteria and double personalities.

Next, attention is drawn to the theories of psychical traumata as the genesis of neurosis, especially of hysteria, and the therapeutic value and limitations of abreactions. The idea of the split in consciousness was extended to other forms of neurosis, the split being due to repression of unwelcome experiences. It was postulated as a result of experience that all such repressed

material was sexual, and thus the fundamental theory of psychoanalysis was built up and the therapeutic procedure of free association evolved whereby the resistances of consciousness might be overcome. But, as the author points out, the analyst never divested himself of the shadow of his theory, so the assumption was tacit that anything resisted by consciousness was bound to be sexual. Next the development of the understanding of and importance of transference is discussed, and the Freudian theory of the interpretation of dreams and meaning of symbols is criticized as depending entirely on the phantasy which is the theory of psychoanalysis.

Adler's theory that neurosis rests on self-assertion, compensation for inferiority, and failure to adapt to reality on the basis of a practical failure in assertion and compensation is discussed shortly and not very adequately.

The theories of Jung which the author regards with favour are then studied. The conception of the collective unconscious by which Jung undoubtedly escapes the limitations of the Freudian and Adlerian hypotheses is explained; but for many of us the explanation leaves us with a feeling of diffuseness which can explain nothing. The compensatory action of the unconscious results in everything having a dual meaning and every impulse having a dual goal, since there can be no phenomenon without its compensatory opposite. Such a conception, of course, enlarges the potentialities of the human psyche, but detracts from its definition. For Jung the neurosis consists of the intersection of the opposites in a wrong way. Jung's classification into personality types according to the attitudes of extraversion and introversion, and the functions of thinking, feeling, intuition, and sensation, are discussed shortly, and then the author passes on to a consideration of the more difficult subject of transcendent function. The concept of the animus and anima, the masculine and feminine principles present in woman and man respectively, is dealt with at some length as explaining much in human conduct, and finally notice is given to the synthetic function of dreams.

The translator is to be congratulated in that, unlike so many translations from the German, the present book is clear and readable, but it is doubtful if this work really contributes much to our knowledge. There have been so many expositions and apologists of Freud, Jung, and Adler of recent years that a new work requires to have something very illuminating to say to be of real value, but we fail to find this novelty in the present volume.

R. G. Gordon.

The Principles of Logic. By C. A. Mace. (London: Longmans, Green & Co. 1933. Pp. xiii+388. Price 12s. 6d.)

In appraising Mr. Mace's book it is necessary to bear in mind the purpose which it is designed to serve. The author makes it clear in his preface that the book is meant to be genuinely introductory in character. It is written primarily for the use of those students who pursue the subject for only a single year. Its object is rather to indicate the nature of the questions which the logician endeavours to answer than to make any original contribution to the science.

Mr. Mace succeeds on the whole in keeping within the limits which he has set himself. His treatment of the subject is throughout expository rather than critical. He adopts as a starting-point the conception of logic as the study of the principles of correct thinking, going on to define it as a relatively complete, precise, generalized, and systematic account of the principles of inference. Various examples are given by him to show what a process of

inference is. There follows a chapter on the nature of the proposition, which is defined as the objective factor in the judgment. We are warned against taking "factor" to mean "constituent" or "part," and thus supposing that propositions are mental. To the question, "What is the ultimate material of propositions?" which seems to me to be a meaningless question, the answer given is that it may be regarded "as consisting not of words, nor of purely mental stuff, but of the entities of which the actual world is composed" (p. 39). The ground for saying this is that "it is reasonable to suppose that the ultimate constituents of a proposition are also the ultimate constituents of a fact." I confess that I do not find the author's views of the nature of facts and their relationship to propositions wholly intelligible; but he disarms criticism of them by admitting that they are over-simplified, and that they raise difficulties with which it is beyond the scope of his book to deal.

The next six chapters (pp. 59–184) treat successively of the methods of combining simple into compound propositions, the traditional view of the forms of propositions, the traditional view of the principles of inference, and finally the generalized theory of deduction. The exposition is concise and efficient throughout. The only thing I find to regret in it is that the author did not more sharply separate the philosophical question of the analysis of general propositions, which belongs to a part of logic wholly uncovered by the definition of logic as a study of the principles of valid inference, from the formal question of the construction of logical truths, and their arrangement into a deductive system. And in discussing this second question, he might with advantage have shown in more detail how the principles of inference of the Aristotelian logic are contained in the class calculus, and the principles of the class calculus in the propositional calculus. He does, indeed, state that modern logic has generalized the traditional logic rather than replaced it, but he hardly gives the student sufficient indication of the way in which this has come about.

The remaining nine chapters are devoted to the subject of probability and induction. They contain a general account of scientific method. including statistical method, which is superior to anything else in the book. Mr. Mace is happy in his choice of examples and generous in providing them. And his account of actual scientific procedure is simple, straightforward, clear, and accurate. With the question of the validity of scientific procedure he deals less surely, though his exposition of Mill's and Johnson's methods is lucid and comprehensive enough. He seems on the whole to follow Keynes in supposing that probability is an unalysable logical relation between propositions, and that the acceptance of the principle of limited independent variety affords the generalizations of science as high a probability as they need or deserve. This is not the place for an attack on Keynes's theory, misguided though I believe it to be. But I may venture here to reproach Mr. Mace for failing to consider the possibility that the attempt to justify induction rests on a mistake, on a failure, namely, to recognize that we are dealing here with a methodological principle, whose success in practice is the only warrant for it that can be, or needs to be, obtained. Surely this is the real discovery made by Hume.

In sum, my criticism of Mr. Mace on this point is not that he has fallen from his own high standard of clear exposition, or that he has given a false solution to a problem, but that he has posed a fictitious problem. And this is the type of criticism to which the very nature of his task lays him open all along. For logicians do not differ merely in respect of the solutions which they give to certain questions: they differ even more acutely in their conception of the questions which logic has to solve. Thus, those who view logic objectively

as a body of tautologies will hardly be satisfied with a survey which represents us as beginning, in our pursuit of logical inquiries, "with concern for the private and personal difficulties we encounter in our attempts to think, and ending with the disinterested contemplation of the most general and the most abstract features in the nature of things." Yet to have done justice to every reputable view of logic would have greatly augmented the length and difficulty of a book which, for an introductory survey, is long and difficult enough already. And the author cannot fairly be blamed for confining himself to a conception of logic which is still the most fashionable in this country. Moreover, he does indicate the existence of alternative conceptions, and refers, at the end of every chapter, not only to the books in which his own type of view is further developed, but also to the works of dissentient authors. Indeed, the bibliography is one of the best features of a generally successful book.

A. J. Ayer.

Indian Idealism. By Surendranath Dasgupta, M.A., Ph.D. (London: Cambridge University Press. 1933. Pp. xxiii + 206. Price 10s. 6d.)

The author of this work, Principal of the Sanskrit College, Calcutta, will be remembered from our detailed review, in Vol. VIII of *Philosophy*, of the second and latest volume of his monumental *History of Indian Philosophy*. The work before us contains with but few alterations the lectures delivered by him years ago as the Readership Lectures of the Patna University and is published as a "first attempt to put together some of the most important strands of Indian idealistic thought within a small compass."

The six chapters (conveniently divided into numbered sections) deal respectively with (I) Beginnings of Indian Philosophy, (II–III) Upanishadic Idealism, (IV–V) Buddhist Idealism, and (VI) The Vedānta and Kindred Forms of Idealism.

It goes without saying that for the most part the contents of the work read like an abstract from the author's *History*, yet the treatment of the subject-matter as well as the latter itself are not quite the same. We have here a more decided attempt at presenting the history of Indian philosophy as a connected whole, and side-looks to Western thinkers, purposely avoided in the *History*, are not wanting (Bradley, the English Nāgārjuna!). The principal Upanishads are individually described, not synthetically as in the *History*. This latter work being still in progress, a few systems not found in its published volumes had to be taken into account. Of these the ancient Vaiṣṇavite philosophy called Pāñcarātra, as represented by the Ahirbudhnya-Saṃhitā, has thus for the first time found a place in a history of philosophy. Special importance has been rightly attached to it, because it is the systematic elaboration of the philosophy of the Bhagavadgītā. Being "quite uninfluenced by the later philosophical speculations," this "best reconciliation of the apparently irreconcilable strands of Upanishadic thought" is dealt with, after the Gītā as the first attempt of that kind, in the second chapter on Upanishadic idealism, and is tentatively called the *idealism of dynamic pantheism*, a somewhat queer label, indeed, which, however, well indicates the two tendencies synthesized in this system.

That Buddhist idealism has been given considerably more room than the one allotted to the idealistic systems of the Brahmins will surprise no one who knows the great indebtedness of the latter to the former. The Buddhists are the founders of scientific philosophy in India. The philosophy of the Buddha himself is described by our author according to the scholastic view

(Thēravāda), *i.e.* as *pluralist phenomenalism*, at the end of the second chapter on Upanishadic idealism, which is indeed its proper place. But just for the latter reason a few hints would have been desirable as to those uneffaced vestiges in the Buddhist scripture which show the Buddha in much closer contact with Upanishadic idealism than the scholiasts, and to which long ago the writer of these lines and in recent years Mrs. Rhys Davids have called attention.

The last chapter has become too short. Tantrik idealism, *e.g.*, has been dealt with in a rather too sketchy way, as also the Kashmirian Trika philosophy with its superb literature cannot be sufficiently explained on two pages only; and the little section (29) of less than one page on the Ekajīva-vāda is not proportional to the interest that attaches to the only systematic attempt at *solipsism* made in India.

It is a pity that the friends of the author mentioned in the Preface who have seen the work through the press are all of them Indians. An Englishman could have helped to improve the language and would have pointed out not a few passages and terms (such as *vikṣepa-śakti*, p. 193) which are not likely to be understood by the general Western reader. We have also found some misprints and inconsistencies[1] which must disappear in a future edition. But this is not meant as a discouragement. Every reader, we feel sure, will draw profit from this highly interesting work, the use of which is facilitated by an excellent summary covering seventeen pages.

F. Otto Schrader.

Religion and the Sciences of Life. By Professor William McDougall, F.R.S. (London: Methuen & Co., Ltd. 1934. Pp. xiii + 263. Price 8s. 6d. net.)

This volume consists of miscellaneous essays and addresses of which most have appeared elsewhere and which are now brought together. They are of uneven quality and varying interest, although readers will differ as to which are the more interesting and the more valuable; and most are rather sketchy. It appears that Professor McDougall (1) is very much opposed to mechanism and materialism, this opposition resolving itself into a condemnation of physical science in favour of his own psycho-biological science, (2) believes in the idea of native endowment and in differences in quality of stock, (3) is devoted to the eugenic ideal of quality of stock in a people, (4) is very much concerned about the failure of the best stocks to reproduce themselves, and (5) is a believer in the need and efficacy of family allowances to induce the best types, at present handicapped in various ways, to propagate the race. The ideas do not always seem consistent. If there is an increasingly powerful biological opinion against mechanism and materialism, why the urgency of McDougall's writing; and if it is so, why speak of the spread of materialism and its increasing danger to civilization? The Burmese, a happy, gentle, and tolerant people, are criticized because of their intellectual sloth and their lack of the rudiments of scientific culture; but science is also held to be the source of the world's grave disorder and chaos. The development of mechanical science has led to an enormous increase in the world's population and several of the essays are dominated by the spectre of over-population; yet science has intensified economic comfort. Over-population, manifested in a life at the bare subsistence level, is a cause of the degradation of civilization; economic well-being, as in America, is a cause of racial decay; over-population, as in

[1] Bākyapadiya (p. 196) is an ugly disfiguration of Vākyapadīya, and the constant use (pp. 88 fll.) of Pali *saṃkhāra* among Sanskrit terms cannot be justified. And is not *tathatā* (pp. 86 fll.) rather "thusness" (*tathā-bhāva*) than "thatness"?

Japan, is not a cause of failure; native or racial qualities are the causes of the rise or collapse of culture. Professor McDougall, in view of his awareness of the anomalies in modern civilization and of the part played by the economic factor, might have been expected to grasp how feeble is the idea of family allowances in face of the gravity of the problem and how little his own opposition to mechanical science bears on the issue. Although his discussion contributes little to advance a general solution, he is at least deserving of praise for attending to a type of problem in which unfortunately far too few contemporary thinkers are interested.

B. M. Laing.

On the Nature and Grounds of Religious Belief. By J. L. Stocks. (Riddell Memorial Lectures in the University of Durham.) (London: Oxford University Press. 1934. Pp. 47. Price 2s. 6d.)

These acute and suggestive lectures treat of (i) the kinds of belief, (ii) religious belief, and (iii) conflicts of belief. "The specifically religious grounds of religious belief (which are obviously the real grounds)" they do not pretend to consider. There are, Professor Stocks argues, three general kinds of belief, viz. those which concern Matter of Fact (including Science, or generalized fact), Mathematics and Metaphysics. To these "Theoretical beliefs" are added the "Aesthetic and Practical."

The belief that "God exists," Professor Stocks argues, is quite unique, since it simulates Matter of Fact in asserting existence, but is unlike it in defying verification. Furthermore, it is not evident *a priori*; nor can it be assimilated to assertions of value unless the value asserted be "of a very peculiar kind."

Professor Stocks's main contention is that beliefs integral to religion (such as that Mind orders all things, and that "the all-ruling mind is essentially all-embracing love") are generically philosophical, or, in the terms of his distinction between Total and Partial Assertions, are such as to involve Total Assertions about the world. Two consequences of this are (i) that non-religious philosophers are acutely hostile to religion because it involves a competing philosophy, and (ii) that religious beliefs cannot possibly conflict with scientific beliefs however well-attested, since these latter are Partial and not Total. Professor Stocks here observes that, "Aggression for aggression, the invasion of the scientific sphere by the spiritualist is undoubtedly the more unwarranted and the more harmful in its results." I do not see, however, that the one aggression is, on Professor Stocks's grounds, more or less *warranted* than the other; and one's estimate of the *harm* effected by either manifestly follows entirely from one's "Total Beliefs." It all depends upon what one takes to be the "good for man."

To venture but two suggestions, it seems to me (i) that the beliefs integral to religion may not be without their own *relevant* verification, and thus may not be of just the same order as, let us say, the propositions composing the philosophy of Leibniz. Very probably Professor Stocks would not deny this. And (ii), it seems to me that in showing the conflict between the religious attitude of "all-embracing love" and the moralistic attitude Professor Stocks underestimates the central and fundamental importance in theology of the *wrath* of God.

Ralph E. Stedman.

Moscow Dialogues: Discussions on Red Philosophy. By JULIUS HECKER, Ph.D. (London: Chapman & Hall. 1933. Pp. xvi + 285. Price 8s. 6d.)

It may be too early to say that Lenin was the greatest European of the first third of this century, or that the Russian Revolution was a bigger historical event than the European War that provided its opportunity; but both these statements may very well be true. Therefore, we all want to understand these matters if we can; and if there is an intelligible philosophy behind them, as the author assures us and as Professors Macmurray and Laski as well as Mrs. Beatrice Webb say on the jacket, we think with some excitement of a lucid presentation of it.

It may fairly be claimed, I think, that Dr. Hecker has earned our gratitude both for his conception and for his execution of his task. True, these dialogues do not contain any marked dramatic quality. Nevertheless, the device of representing an assorted group of American tourists as having a series of discussions on red philosophy with Tovarishch (Comrade) Socratov allows the theme to be developed with rapid changes of perspective. Indeed, the "humanist" (in the American sense of that word) frequently makes intelligent interruptions; the banker and the senator at least represent a significant point of view; the rather-more-than-almost-persuaded "professor" (whom America later treats in a Bolshevist way) relieves Socratov from some of his heavier stuff; the reformist should plainly be present; and if the unintentional clowning of the rotarian is not very skilfully done, it was perhaps wise to have a clown somewhere. Again, the book is well arranged. It begins historically, expounds its philosophy in the middle and applies it at the end. Moreover, the several dialogues (there are twenty of them) are compact and orderly, making subsequent reference easy.

Indeed, if the "understanding" of a "philosophy" is possible when the philosophy itself is unclear, we may well agree with Professor Macmurray in his introduction that this book does help us to "understand." The book convinces me, however, that red philosophy itself is not an intelligible body of doctrine; and I should say that it demonstrated the pallor of red philosophy.

The central conception of "dialectical materialism" as presented by Dr. Hecker appears to be neither dialectical nor materialistic in any rigorous sense. Its "dialectics" appears to consist of deplorably empty talk about the "negation of negations" and the like without any serious attempt to show what *must* "negate" what, or how it must do it. The workers, for example, are supposed to "negate" the bourgeoisie (I suppose with machine guns) for reasons which, if sound, would equally prove that the unemployed must "negate" the workers. Again, this "dialectic" cheerfully borrows the very worst parts of Hegel's alleged logic. When, for example, the Senator remarks that capitalism has *not* increased the misery of the workers, Tovarishch Socratov invokes the "dialectical categories of the unexpected and the accidental" (p. 104)—although he also says some other things that are more to the purpose. And what should be thought of the flabby logic that infers (p. 96) that laws of movement must themselves move?

Similarly the alleged "materialism" seems to mean almost anything the red philosophers may happen to want. Apparently it must be a "realism" of some sort and must "put Hegelianism on its feet instead of on its head" by recollecting that consciousness must have developed from a prior unconsciousness. Engels, however, in explaining the way in which Hegel should be made to occupy a normal human posture construed the necessary "materialism" *either* as a representative theory *or* as a theory of neutral monism without troubling to choose between them (p. 71). It is scarcely pretended that Lenin's treatise against the wicked communists who flirted with the ideas of

Mach and of Avenarius was more than a political move under a philosophical flag; and Tovarishch Socratov includes just as much "subjectivism" in his "materialism" as he wants by the puerile device of saying that any discontinuity in Nature (such as the natural gaps or jumps according to the Quantum Theory") introduces a "subjective element" into Nature (p. 195). We learn indeed that a wretched man called Deborin renounced his "Menshevik idealism" because he was outvoted at a great conference in 1930, and "publicly confessed his former Menshevik errors" like an unusually docile Church Father at an ecumenical council; and that, in 1929, "mechanistic" materialism was similarly voted down. Materialism must therefore avoid the Scylla of idealism and the Charybdis of mechanism; but precise sailing directions are almost wholly to seek.

It is scarcely surprising, therefore, that the applications of this "philosophy" to religion, morals, or art are quite nebulous. Regarding religion (perhaps because a tame bishop from the Church of England was present), Tovarishch Socratov is rather reticent and even humble. He disclaims final views (p. 200) and even says that "we have not stopped to think why we do the things that seem so unusual to you." His simple opinion seems to be that Russia's immediate goal is best served by remembering the way in which Christianity in the past has so often been used as an anti-proletarian bludgeon. Regarding ethics, he appears to think that "in a classless society . . . a human (i.e. "humanistic") morality will at last be possible" (p. 216), but that, at present, all conduct should be subordinate to the class dominion of the workers. When he comes to art, however, he lays emphasis, somewhat surprisingly, on "the world-wide outlook of human brotherhood" although he remarks, quite correctly, that "proletarian music" may be very good music although intensely class-expressive (just as, we might say, Christian art might be very good art although intensely pious). In short, Socratov is sitting on a woolly fence, taking comfort from the wool. He does not try to tell us, *e.g.* whether a judge should decide against the evidence if a conviction seemed politically expedient; or, if not, why not; and some of his comments upon other moralists are amazingly weak. Thus he objects to the "greatest happiness" principle on the ground that it presupposes ineradicable misery (p. 217), and in proof of his optimism asserts that poverty, disease, and ignorance can be cured. These, however, were precisely the examples of *removable* evils that Mill gave in the second chapter of his *Utilitarianism*.

Dr. Hecker is to be congratulated on his command of the English language (if not of its spelling). One of his few slips is the statement (p. 73) that Feuerbach, Marx, and Engels were *revolting* pupils of Hegel.

JOHN LAIRD.

A Bibliography of Aesthetics and of the Philosophy of the Fine Arts from 1900 *to* 1932. Compiled and edited by WILLIAM A. HAMMOND, Professor of Philosophy, emeritus, in Cornell University. Revised and enlarged edition. (New York: Longmans, Green & Co. 1934. Pp. x + 205.)

It was a red-letter day for aesthetics when the American Philosophical Association, as the first volume in a comprehensive bibliography of modern philosophy, decided to publish this magnificent and unique survey of the main trend of aesthetic speculation between 1900 and 1932. Their editor, Mr. Hammond, has done for the modern period what Gayley and Scott did for the period reaching from classical antiquity to the nineteenth century,

and every philosophical library should find a place on its shelves for the fruit of his practically impeccable scholarship. To my knowledge, no substitute or equivalent exists; at present it is only by wading through the annual bibliographical supplement of the *Zeitschrift für Ästhetik und allgemeine Kunstwissenschaft*—a periodical to which Mr. Hammond pays a well-earned tribute—that the student can hope to trace the meanderings of aesthetic thought through recent times.

It includes within its scope almost every type of literary production in which aesthetic theories are usually discussed, passing from periodicals, historical writings, systematic and general works, to detailed studies of the individual arts, of their origins, of the varieties of artistic style, and finally to the broader question of the peculiar relationship between art and psychology, morality, and religion. There is at this point no really serious omission or fault of arrangement; but one chapter might, perhaps, have been given to the literature of the minor or applied arts, and the problem of the child's aesthetic experience would have found an appropriate place in the pages devoted to the origins of art and its manifestations among primitive peoples.

But even the most thorough and conscientious scholarship is liable to error; and, in the hope that an amended second edition of this invaluable work will soon be demanded, I shall endeavour to indicate one or two writers whose names or publications do not now appear on the list so carefully compiled by Mr. Hammond. No scholar could fail to detect some striking lacunae. It is surprising, for instance, to find no mention of S. Alexander's *Space, Time, and Deity*, Vol. II, or of his important pamphlets on *Art and the Material* and *Art and Nature*, under the heading of general theory; it was, of course, a distinct pity that his *Beauty and Other Forms of Value* was too late for inclusion in this survey. Under the same rubric should have come J. Sully's article on "Aesthetics" in the eleventh edition of *Encyclopaedia Britannica*, and Herbert Read's Essay on *The Meaning of Art*. In the historical section it was unfortunate that the *Essai sur les tendances critiques et scientifiques de l'esthétique allemande contemporaine*, published by M. Bites-Palevich in 1926, found no mention, as it contains a very elaborate account of contemporary German speculation.

G. Baldwin Brown's *The Art of the Cave Dweller*, unrivalled among English studies of the origins of art, is curiously ignored, and M. C. Burkitt's interesting chapters in *The Old Stone Age* share a similar fate. Our author is silent about G. L. Raymond's application of his first principles to music, poetry, and the plastic arts, about Roger Fry's recent work on *The Arts of Painting and Sculpture*, about S. Freud's *Introductory Lectures on Pyscho-analysis*—of capital importance to the psycho-analytic hypothesis—about P. A. Lascaris on *L'Education esthétique de l'Enfant*, about C. H. Reilly on *The Theory and Practice of Architecture*, and about both *The Economic Laws of Art Production* and *The Place of Economy in Art*, two brief works in which Sir H. Llewellyn Smith discusses certain economic and social factors in the historical development of the arts.

But these are minor blemishes on by far the best guide to aesthetic literature in modern times, and if the subsequent volumes published in this series live up to the standard set by the first, the American Philosophical Association will be able to congratulate itself on a very considerable service to philosophy.

LISTOWEL.

Carlyle and German Thought: 1819–1834. By C. F. Harrold. (New Haven: Yale University Press. London: Oxford University Press, Humphey Milford. 1934. Pp. xii + 346. 2 dollars 50 cents.)

Carlyle and German Thought: 1819–1834, by Ch. F. Harrold, is the subject of Vol. LXXXII of the *Yale Studies in English*. The 240 pages of the text of this treatise are fully supported by about 80 pages of valuable notes, and there is added also a useful appendix by W. Leopold on *Carlyle's Handbooks on the History of German Literature*. The subject is one that has been touched upon by most writers on Carlyle and dealt with in parts, especially by Carré, Cazamian, Kraeger, Hensel, Fehr, Baumgarten, Hagberg, Wellek, Lehmann, Storrs, and Leopold. But while this is "the first comprehensive study of the problem, that hitherto has only received fragmentary and conjectural treatment," it will be admitted that the author's handling of the "wide-weltering" mass of facts, ideas, opinions, and conclusions is so complete, so well documented, scholarly, balanced, and convincing, that it bids fair to constitute also the last word on the problem. Above all, the book is distinguished by a *Gründlichkeit* and *Vollständigkeit* that remind one of the very best type of German scholarship. At the same time, it is eminently readable and stimulating from beginning to end. It has been the avowed aim of the author to collect the conclusions of all valuable previous studies touching on the subject, to supply original additional information on neglected or debatable points, and to attempt a critical and synthetic interpretation on the complex problem as a whole. Among German thinkers that were understood to have had a more or less decisive influence on Carlyle during the formative period of his thought, we now recognize that the following—approximately in the order of their significance for Carlyle—were the most important: Fichte, Goethe, Novalis, Kant, Schelling, Richter, Schlegel, Schiller, Jacobi, Werner. Lessing and Korder do not come into the picture. As a number of these thinkers have influenced one another, and as they form more or less part of one great movement of German thought, it has been a task of supreme delicacy, complexity, and difficulty to separate out, as far as possible, their individual contribution to Carlyle's development. Moreover, Carlyle was temperamentally incapable of taking over the system of another thinker, or any organic part of it. He was essentially "not a philosopher, but a man of letters," unsystematic himself, working by intuition, an eclectic, "a wanderer among ideas, seeking here and there an echo of his own convictions." "He handled philosophical problems with the negligence of a gifted amateur." He was "indifferent to the origin and extent of the influences upon him." As Cazamian has put it: "His originality lies not so much in the discovery of ideas, as in their transposition and interpretation." By way of illustration of the fact that "Carlyle in his handling of German ideas touched nothing that he did not alter," the author points to Kant's distinction of Understanding and Reason, his conception of Space and Time, Fichte's Divine Idea, Goethe's Gospel of Work, Sanctuary of Sorrow, the Reverences, the Duty of Silence, Renunciation, the Vesture of the Godhead. It is one of the great merits of his book that in every instance the extent and direction of Carlyle's departure from his "sources" has been indicated. Under these circumstances, one is not surprised to learn that the influence of German thought on Carlyle has been much exaggerated. It is significant that many of Carlyle's "borrowings" were taken not from systematic works, but from more or less recondite passages of books of an aphoristic character. From these he would pick a striking and graphic phrase, that seemed to confirm his own ideas or to give relief to them. In this way even Goethe, certainly one of the most decisive and lasting influences on him, was for

him "not a point of departure, but a *point d'arrivée*. Carlyle, in many cases, was prepared by his own development for the reception of these German ideas, in which his own views found confirmation. On the whole, then, the author has succeeded in vindicating Carlyle's originality, and he has done so by stressing the dominating influence of his parents, his early environment and puritan upbringing, which persisted as an indelible character of his mind, and by its ascetic tone coloured every idea and the sense of every significant phrase that he gathered from his voluminous reading and transferred to his own argument. His acquaintance with some of the German authorities was very limited and fragmentary. His knowledge of Kant was largely at second-hand, through Coleridge and Jacobi. There is "no evidence that he ever understood or tried to understand Kant's *Critique*." With Fichte and Schelling he seems to have established closer contact. Among the more important chapters of the book which follow the general introduction, "Carlyle's Universe," "Understanding, Reason, Phantasy," "Carlyle and Heroes," "Carlyle and the Problem of Life," we should like to single out "Carlyle and History" for special commendation. It should also be pointed out that the author had in recent years already proved himself a Carlyle scholar of note by his essays on *Carlyle and Kant*, *Carlyle and Novalis*, *The Mystical Element in Carlyle* and *Carlyle's General Method in the French Revolution*.

OTTO SCHLAPP.

The Philosophy of Bhedâbheda. By P. N. SRINIVASACHARI, M.A. (Madras: Srinivasa Varadachari & Co. 1934. Pp. xvi + 366. Price Rs. 5; 7s. 6d.)

Bhedâbheda, a compound of a positive and negative, and meaning unity and diversity (*lit.* breaking-up and its contradictory) was the centre-point of a mediaeval Hindu philosopher, Bhāskărā, who is, it would appear, entirely forgotten save in his writings. Neither the author, a Madras professor of philosophy, nor Professor Hiriyama (*cf. Philosophy*, Vol. VIII, No. 32), who writes a foreword, enlightens us about the man by a single line. This is not encouraging for the reader of to-day, who is getting tired of losing the man in a system of ideas. But he will do well to persevere and study with sympathy and appreciation the ways in which early Indian culture wrestled with the problem involved in Immanence: the mystery of the one and the many in man's inherent Godhead, and the long way of making a potential into an actual unity. The author seeks to instruct his youthful fellow countrymen by modern parallels in Western thought. But in both those he quotes and in his own Bhāskărā a solution of the problem does not lie. All of these are too much under the heavy mortmain of Being and Appearance, or, to cite him, "pan-illusoriness." A great son of India did show the way to more light. Will not Mr. Srinivaschari help dig up the forgotten solution to *Bhedâbheda* suggested by the Sākyamuni?

C. A. F. RHYS DAVIDS.

The Secret Lore of India and the One Perfect Life for All, being a few Main Passages from the Upanishads. By W. M. TEAPE, B.D. (Cambridge: W. Heffer & Sons, Ltd. 1932. Pp. xvii + 345.)

It is well to see men who, apart from urgent convictions, are professionally pledged to uphold ecclesiastical Christianity, confessing, in a spirit that goes

beyond denominationalism, to the strong appeal they find in the Upanishadic teaching. At least in that of the few reckoned earliest, or "pre-Buddhistic." They help to spread the wider religious view that "God . . . at sundry times and in divers manners *hath spoken*." They, more in a way than the creedless man, help to break the bars of sect. They show a long broad growth where many see only a thin ray of intense light in prevailing darkness.

In more specific comment, I commend the way in which Mr. Teape sees, not an abstract self, but a Perfect Man felt after in the Upanishads. But (1) I disagree with the ignoring how, in them, the growth, the becoming (*bhū* is this, *not* existing) of him is also felt after. Dr. Hume's renderings show this, as Deussen's do not (he was too prejudiced), yet the former is blind to the inference to be drawn therefrom. (2) I deprecate the ignoring of Max Müller, without whose pioneer work this book would not have come to be written. (3) I strongly deprecate the fitness of "secret lore" for the Upanishads. They were academic "classes" in religion, among other classes, given by professional teachers to *both sexes* (*cf. Ait.* 5, 1, 4ff) for a fee, and suitable, almost entirely, for the youth of the "higher" classes. They were not "Greek mysteries," and their broad, stable, *if unfinished*, religious value lies in the fact that they, as a gospel of Immanence, were collectively a lofty creed for Everyman.

C. A. F. Rhys Davids.

Yoga and Western Psychology; a Comparison. By Geraldine Coster. (London: Oxford University Press, Humphrey Milford. 1934. Pp. 248. Price 5s.)

The author has followed up her earlier work, *Psycho-analysis for Normal People*, by this spirited attempt to enlarge her field historically, in which she places the modern art of psycho-analysis beside the ancient Yoga-therapy of India. Herein she judges that the former has as yet only got so far as to achieve what the latter seeks to achieve merely in its rudiments. In its advanced stages, Indian Yoga proposes to take the initiate to a new world of development, where as yet our psychology has nothing to offer. This is a very stimulating challenge to us, and one which I hope may be taken up. It will necessitate a more thoroughgoing exploration of the nature of Yoga at different periods (for it has its history) than her short treatise is able to give. Yet even this might have profited by references to the *editio princeps* of the Yoga Sūtras by Professor James Woods. Her own knowledge of these suggests knowledge at second-hand, derived from M. N. Dvivedi's work. Anyway, we get a somewhat over-Westernized idea of what a good many terms may really have meant to the Indian mind. For instance, the word "will." Ancient India never had so fit and strong a term as this. She had *kāma* (*karma* is, of course, not meant). But when the Yoga Sūtras were serially compiled—about 300 B.C.?—this term, which at the best meant "desire," *i.e.* an emotional term with will and thought as co-efficients, had become worsened into meaning *only sensuous* desire. But Miss Coster equates, for Yoga, our "will" with *ātmā*, or "self." Fundamentally I hold she is right, but I question if Indian Yoga would ever have admitted it. The Yoga Sūtras have much to say about desire, and it is always, as in ecclesiastical Buddhism from about the same date, in a bad sense. But that the whole of Yoga is virtually a discipline and development of will, without an adequate word for will, is not clearly brought out. There is discussion of the word in its modern usage and misusage, with reference to Coué. Now Coué, as I have said else-

where (*The Will to Peace*, 1923), in opposing will to imagination, overlooks the fact that to be imagining—indeed, to be mentally active—is to be willing, *i.e.* conative. But the author has here different strictures to make. And as to the word "self"—that she makes the Sūtras condemn "self-esteem" as an illusion is to write so "occidentally"—seeing in "self" only our worst self, when for India it meant not only "spirit" but "Holy Spirit"—that we feel a much more careful handling of the text is required. An Index, too, is a need not here supplied.

C. A. F. Rhys Davids.

A New Approach to the Vedas. An Essay in Translation and Exegesis. By Ananda Coomaraswamy. (London: Luzac & Co. 1933. Pp. ix + 116. Price 5s.)

This brochure is intended to be a sample of reform in Vedic translation and exegesis. It contains much general and specific complaint, that work herein is too mainly philological, "too little humane." In other words, translators have shown insufficient knowledge of, or at least sympathy with, parallel "resources" such as are brought to bear on Christian exegesis and translation.

I am not likely, with experience in an adjacent field, to lack appreciation of such a will in reform. I trust the author may go on to expand this sample into a more inclusive treatise. I will herewith make three suggestions as to it. Let him do away with the peppering of his text with capitals to general terms. They are irritating, being no more needed than they are in the Vedic quotations, where, of course, they don't occur. Let him print his Notes (pp. 77–116) in a type not smaller than that of text and exegesis. It is mainly these that scholars will wish to consult. And scholars have hard-worked and ageing eyesight. So handicapped, I have not gone in detail into them. But I have so far failed to note that, in one or the other of his parallel cultures, he writes with a sense of time-perspective. But it is just this perspective, this historic sense that gives real value to the study of ancient world-views. That sense is the Man measuring the Man as growing in a better or a worse. By such we ourselves grow.

I would add that even in a brochure an Index would have been most useful.

C. A. F. Rhys Davids.

The Ethical Movement in Great Britain: a Documentary History. By G. Spiller. (London: The Farleigh Press. 1934. Pp. 195. Price 4s.)

This is a very interesting account of the beginnings of the Ethical Movement in this country by one who has been largely absorbed in it. The movement began in America, chiefly under the influence of Dr. F. Adler; and it is chiefly associated in this country with the names of Dr. Coit and his daughter Virginia; but Edward Caird, Henry Sidgwick, Professor Muirhead, and some others have helped to give it a firm hold in England. In its early beginnings it was pretty strongly opposed to the ideas of God and Immortality; but latterly it has been a good deal influenced by psychical research, and has thus lost the somewhat negative attitude towards other forms of religion that was at first characteristic of it. I believe that this change has greatly enhanced its influence for good. Most of the particulars that are recorded in this History

are probably familiar to many readers of *Philosophy*; but, so far as I can judge, it is a thoroughly reliable account of the whole movement up to date, and it may consequently be expected to retain a permanent value.

J. S. Mackenzie.

Filosofi del novecento. Appendice a La Filosofia Contemporanea. By Guido de Ruggiero. (Bari: Laterza & Figli. 1934. Pp. vii + 297. Price 20 lire.)

The volume consists of seventeen articles contributed during the past six years to *La Critica* under the general title of "Notes on the Latest Philosophy of Europe and America," and now offered in collection as a supplement to the author's remarkable survey of philosophy since about 1850, *La Filosofia Contemporanea* (1912; English translation, *Modern Philosophy*, Allen & Unwin). Subsequent editions of the latter work have brought up to date only the section dealing with Italian thought. The present volume carries forward the account of the remaining movements. Behind it lies the same wide and indefatigable reading, and in it the same elevation of concise exposition to luminous interpretation, the same penetrating dialectic, and the same delightful style, strewn with beauties which are never adventitious to the theme. I know of no living historian of philosophy who so steadfastly elicits the major metaphysical issues from the frequent verbiage of our long lucubrations, who in his unsparing searchingness ignores so superbly the mere paraphernalia of the search and presents with perfect directness the relevant material to be judged and the canons by which the judgment may be ruled. Since for the philosopher the history of philosophy can never be merely history, our only justification for spending so much time on it in our curricula being that it is an incomparable propaedeutic to personal philosophizing, and since Professor de Ruggiero writes constantly from this point of view, and writes with genuine distinction, I am sorry that his translated work is not more widely read here, and that his other volumes have not taken their place in English alongside it. In selecting works for translation we seem to prefer obvious to concealed erudition, out-of-the-way thoroughness to selective insight. Perhaps brilliance loses its lustre in the conversion to another tongue; heaviness survives the change.

The book opens with three chapters on British realism, which deal chiefly with Alexander, Whitehead, Broad, and Lloyd Morgan. So convinced an idealist as Professor de Ruggiero cannot be expected to think well of this line of thought, but he makes the remark that it would be "wrong to judge realism simply by its conclusions," and admits that realism has had the historical value of contributing to the critical revision of idealism which some idealists are now undertaking. The generic error of realism consists in failing to do justice to those very features of the subject that make it a subject: Alexander's reduction of the relation of subject and object to one of "compresence," and Whitehead's dilution of the subject into a "percipient object" (with all the stress on the noun) are instances, instances which reveal the naturalism logically involved (whether or no also intended is beside the point) in realism; and the insuperable objection to naturalism is that it cuts instead of solves —cuts because its principle precludes solving—the problem of knowledge. The author finds a growing consciousness of this weakness and a consequent tendency in an idealistic direction in Lloyd Morgan and in the later work of Whitehead, and observes that Alexander's analogical assimilation, however unwarranted it may be, of the relation of each emergent order and the order

from which it emerges to the relation between mind and body is a reversion of the standpoint of realism. I am not sure that this observation is right, for the real—and realistic—point of the analogy as I understand it is to insist on the temporal priority of the physical and thus to preclude the very possibility of mind being the creative spring. The weakness of the analogy lies, of course, in its conceiving mind as simply that which *supervenes* on the body, the significance of its retroaction on both this and on the suborganic and of its curious activity of *knowing* these being left unexplored. The effort to seize the implications of the undisputed superiority of mind is the characteristic mark of idealism, and of this in Britain at the present time the author detects very little: he devotes one article to Sir James Baillie and Mr. Collingwood, regretting the former's withdrawal from metaphysical construction and welcoming the latter as representing a younger and newly conceived idealism. A casual reference to the "great success of Bergson and Croce in England" is, I fear, a misinterpretation of our frequent references to these two thinkers, whose influence among us has been small.

Of the present state of philosophy in Germany Professor de Ruggiero has a poor opinion. He clearly would not countenance the supposition that to be up to date one must keep pace with the endless publications from Leipzig, Berlin, Munich, and Heidelberg. Out of the army of writers he has, one infers, little ground for making any choice at all, but selects the historicizing group of Dilthey, Troeltsch and Spengler, and the Phenomenologists. His comments on the latter are straight and strong. "I confess that I have several times tried to approach with an open mind the philosophy of Husserl, and on each occasion have come away with a feeling of impatience and irritation. . . . To be forced to move through a maze of formulas and pierce the abstruseness of a language which, especially in Heidegger, is far more difficult than that of Hegel, and get at the end of it only irrelevance and banality, is the worst misfortune that can happen to a student who hates to waste or misspend his time." The confession is interesting from so inured a reader, and may serve to encourage other readers to equal candour. It is not merely the "implacable finicality" and consequent verbalism that Professor de Ruggiero cannot abide, but the triviality of the principle itself of Phenomenology. When you have abstracted from both the subjective conditions of knowledge and its reference to reality, he asks, what is there left that is worth thinking about? "Most disconcerting of all is the fact that Husserl's doctrine, or rather his method, is in its very principle out of the reach of criticism, and can only be refuted indirectly by the barrenness of its results. Imagine a melancholiac who shuts himself up in his room and claims to form an idea of the world from the shadows of things that fall on his wall. The example has some analogy with Plato's man in the cave, but with this difference, that the latter has no alternative, whereas our melancholiac has shut himself up of his own free will, with the claim to see better thereby, and is, moreover, so fully aware of the nature of his procedure that he is on his guard against confusing the shadows with the things, and gives his science the name that suits it, namely, the science of shadows. His position is irrefutable. There is nothing against it except the wisdom of the adage, The ass to his straw (*chi si contenta gode*)." The picture seems to me to be just. To trace out the purely logical affiliations of concepts is too exhausting to be called a game, but it is also too aimless and endless to deserve to be called philosophy.

Santayana (wrongly described as a naturalized Englishman) and Dewey are the only Americans brought under review. Three French thinkers are given a chapter each—Hamelin, Meyerson, and Bergson in his latest phase. Many will welcome the inclusion of Hamelin, of posthumous fame, whose

analysis of the categories is considered by Professor de Ruggiero to be one of the best since Kant.

The author's versatility is illustrated by three pregnant chapters on the philosophical bearings of recent science. The theory of relativity is driving physicists away from materialism, forcing them to reflect on the first presuppositions of scientific method, and convincing them that this consists in establishing constant relations within a flux whose actuality has meaning only in terms of experiencing mind. In the sphere of atomic physics the controversies of continuity versus discontinuity and of determinism versus indeterminism are of interest to the philosopher. One thing is clear, namely, that the atom, in ceasing to be a mere hypothesis, has ceased to be really atomic, since its structure is now seen to be complex and its behaviour to a large degree to be a function of its field. All which leads the physicist to a more plastic conception of inanimate nature, a nature of more varied possibilities, one that, unlike the old mechanism, leaves room for the satisfaction of the idealistic exigencies of philosophy. A chapter on "Darwinism and its Critics" emphasizes the strength within scientific circles of what may conveniently be called the Lamarckian reaction against the Darwinian account of the method of organic evolution, and argues that this reaction, by insisting on creative spontaneity, alone makes the genetic method established by Darwin truly genetic, for only through creative spontaneity can there be any genesis at all. The book closes with a withering indictment of Freudianism.

A collection of articles cannot be required to cover the whole of its field of interest, but I miss a chapter on the "logistic" programme of the Viennese Circle (Carnap, Reichenbach, etc.), represented distinctively in this country by Wittgenstein. Fuller bibliographical references would, I am sure, be acceptable to many readers. There is an ample index.

T. E. Jessop.

Books received also:—

B. Branford. *Eros and Psyche. An Essay on the Constitution and Destiny of Man.* London: University of London Press. 1934. Pp. ix + 379. 12s. 6d.

J. F. Hecker, Ph.D. (Foreword by S. Webb, P.C., LL.B.). *Russian Sociology.* London: Chapman & Hall Ltd. 1934. Pp. xvi + 313. 8s. 6d.

W. Sachs, M.D. *Psychoanalysis. Its Meaning and Practical Applications.* London: Cassell & Co. 1934. Pp. x + 246. 6s.

J. Baillie, D.Litt., D.D. *And the Life Everlasting.* London: Oxford University Press; Humphrey Milford. 1934. Pp. xii + 294. 10s. 6d.

Hu Shih. *The Chinese Renaissance.* (Haskell Lectures, 1933.) Chicago: University of Chicago Press. London: Cambridge University Press. 1934. Pp. viii + 110. 7s.

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INSTITUTE NOTES

ANNUAL MEETING

The Ninth Ordinary General Meeting of the Institute was held at University Hall, 14, Gordon Square, London, W.C. 1, on Wednesday, July 4th, at 5.30 p.m. After the unanimous adoption of the Annual Report and Statement of Accounts, short addresses were given by the President, Sir Herbert Samuel, and Professor John Macmurray.

ADDRESS BY SIR HERBERT SAMUEL

Members of the Institute will see from the Annual Report that its finances are in a somewhat more satisfactory condition than was the case a year or two ago; yet the situation still gives rise to some concern, and the financial position will not be firmly established until we are assured of a considerably larger income through a substantial increase in our membership. If all our members would be good enough to consider whether among their acquaintances there are not some persons who, by their interest in philosophy, would be suited for admission to this Institute, and would suggest their names to the Director of Studies, they would be rendering a useful service.

The Editor of our JOURNAL invited me some months ago to open a discussion on the present position of British Philosophy, and I accepted that invitation with some trepidation. I felt, however, that if I wrote anything at all, it should be of a somewhat provocative character, calculated to arouse controversy. I spend my life in an atmosphere of controversy, and, after all, controversy is not a bad thing. A nation which is without it is a dead nation, and an Institute which is without it may soon become somnolent. Yet I confess that I opened the subsequent number of the JOURNAL with some

anxiety, for I thought it very possible that those who replied to my letter might fall upon me with indignant ferocity and rend me in pieces. On the contrary, I found myself very kindly treated. Dr. Collingwood, speaking with his great authority, expressed a general agreement; and if Mr. Aldrich and Lord Listowel were more critical, they were at the same time very tolerant. I think, indeed, that there is a growing agreement with the point of view which I expressed, that philosophy must keep itself in close relation with life, with the world of common-sense. It may be that we are at a turning-point in British philosophy, going back to earlier tendencies and away from Kantian methods. We may indeed be returning, so far as the subject-matter allows, to the Baconian methods, which have proved so brilliantly successful in the sphere of science. As Dr. Collingwood says, these tendencies are clearly manifest in the work of the two greatest of our living philosophers, Professor Whitehead and Professor Alexander, as well as in the work of General Smuts.

I would give an example to which I have briefly referred on a previous occasion. Philosophy has always concerned itself with the problems of Space and of Time. Each has received prolonged and separate examination, and it has been sought to relate each to the other. Now intervenes a new fact. Rutherford and other physicists have discovered by laboratory methods that the atom, which, as its name implies, was thought to be an entity that was indivisible, consists, in fact, of infinitesimal units of electricity in violent motion. Although it is, of course, true that we do not know what electricity is, and although it is also true that later researches may possibly find some flaw in the electron theory of matter, still the proofs that are offered are so convincing, the experiments have been so repeatedly confirmed, that thinkers are bound to accept the theory as a working basis. Now this discovery was unknown to the Greek philosophers, though apparently dimly foreseen by some of them; it was, of course, unknown to Descartes; it was unknown to Kant. It creates for philosophy a new position. It appears that in the physical world a thing not merely *is* but *happens*. Whitehead expresses this in a simple sentence: "The event is the unit of things real."

The result to philosophy must be that any attempt to treat Time and Space as separate entities is futile. The one cannot, by any possibility, be separate from the other. At the heart of the physical universe there is motion, electric units of various kinds in rapid movement. Motion means that *this* is *here* at one time and *there* at another time. You cannot have motion from here to there without this time and that time.

When matter was regarded as inert, it was possible to conceive Extension apart from Time. A piece of rock, for example, was the same ten million years ago and might be the same ten million years hence; for it "Time stands still." But when we accept the kinetic nature of matter, we realize that the rock essentially is not the same from one ten-millionth of a second to the next.

Space without Time is impossible in the real universe; just as length and breadth is impossible without thickness. We can draw geometrical diagrams on a sheet of paper and say that they are contained in length and breadth without thickness, but we know very well that if, in fact, we remove the thickness of the lines of ink and the thickness of the paper they would disappear. The conception is, in fact, what Vaihinger calls "a fictional abstraction."

There can be no Extension without Time; and similarly, there can be no Time without Extension; for if there were no extension, and therefore no motion, nothing would happen, nothing would exist, and consequently there could be no duration. If, therefore, you were to eliminate either Time or Space and thereby make movement impossible, the universe would disappear,

and with it physics and metaphysics, philosophy and the philosopher. This has been clearly shown by Alexander in his great work, *Space, Time and Deity*. The conclusion is that Space-Time is the only subject-matter for philosophers, and that discussions which are pursued and books that are written on other lines must necessarily be both a waste of space and a waste of time!

This Institute must of course be eclectic; it contains men and women belonging to all schools. I should be sorry indeed to suggest that we should pass a resolution at this Annual Meeting to some such effect as "It is desirable that philosophy should base itself on actuality rather than on pure ratiocination," yet I do entertain a personal hope that it is rather in that direction that its activities will tend.

ADDRESS BY PROFESSOR JOHN MACMURRAY

I am glad that this opportunity to express my own sense of the function of this Institute finds me able and anxious to support the plea of our president for a philosophy that is practical and concerned with concrete problems. The existence of the Institute is itself a sign of an awakening consciousness of a need for philosophy in the general public, and in philosophers of a need for the public. Its function is to bring the philosopher and the ordinary citizen into co-operative alliance. This is an extremely difficult task, even when it is undertaken with the greatest good will on both sides; and we shall need courage and patience if it is to be carried through.

Philosophy itself is inherent in the human situation. It is not an invention; nor is it the expression of a limited need which arises in certain people in face of certain special problems. It is always and everywhere fundamental to human life. Every man, every society of men, has its philosophy, though for the most part it is implicit rather than systematically reasoned. It is created by being lived. It is worked out in action through the pressure of the continuous necessity for social adjustment. When the tempo of social change is slow enough for these adjustments to be made gradually and instinctively, the mass of mankind will remain unconscious of any pressing need for a conscious formulation of the philosophical structure of their social life. But there come times, like our own, when the rate of change makes social adjustment difficult and harassing to everyone concerned, so that we are all forced into consciousness of the philosophical structure which determines the shape and the direction of our life in society. At such times the demand for philosophical understanding becomes widespread, and the concrete and practical issues which are the core of philosophy emerge clearly and force themselves upon our attention. In this we find both the origin of the British Institute of Philosophy and the key to its natural function.

Philosophers, whatever else they may be in virtue of their common humanity, are technicians. The special genius of the philosopher consists in an unusual capacity to devise means of intellectual expression through which the fundamental structure of human experience can be formally and adequately thought out into common language and so made communicable. All techniques are, of course, means to an end, and the technique of philosophy is no exception. It is the indispensable technique for large-scale social adjustment whenever this has to be consciously and deliberately undertaken. But all technicians are liable to become so absorbed in the development of their technique that it becomes an end in itself. They are apt to forget what the technique is for, and what are the concrete and practical problems which it is devised to solve. Like the pure mathematician, who is also creating a technique,

the philosopher is apt to become absorbed in the elaboration of abstract devices for the analysis and statement of all problems to which his technique can apply, until he becomes unwilling and even unable to apply it to the contemporary philosophical problem. For there always is a contemporary philosophical problem which is *the* problem to which the technique should be applied. Or like the poet, who is the master of another technique of expression, he is apt to find himself with a tremendous capacity for expression, but with nothing particularly important to express by means of it. Tennyson is reported to have remarked at a dinner-party on one occasion, "I am undoubtedly the greatest master of the English language since Shakespeare. Unfortunately I have nothing to say." In this lies the difficulty which faces the Institute of Philosophy. The public that looks to the Institute knows in a vague and rather dumb fashion what it needs expressed, without possessing the technique for its expression. The trained philosopher has the technique, but is apt to be unconscious of what it is urgently necessary to express and to be understood by means of it. How are these two sides of the philosophical situation to be united in harmonious co-operation?

Here is our problem as members of this Institute. I know that it is not easily to be solved. But there is one thing that often inspires me with hope. This country has not yet made its positive contribution to the history of European philosophy. It has revealed its philosophical tendency in a series of notable philosophers. But their work has always been, in its large effect, critical and destructive. There have been two major periods of European philosophy in modern times. The first, originating with Descartes, was created and dominated by the clear mathematical analysis of the French intellect. The second we owe to the romantic genius of the great German thinkers of whom Hegel was the culmination. Between the two periods, as the transitional figure, stands Immanuel Kant. That second period is rapidly drawing to a close, if it is not already over. The third period, which is beginning, will be dominated by a set of problems which have a peculiar affinity with the temperament and philosophical tendency of the British people, and they will only be solved by philosophers who are surrounded and supported by a social consciousness which demands their solution and which provides the public co-operation which this Institute exists to foster. Of these things I feel reasonably certain. And that feeling provides me with a reasonable hope that the British Institute of Philosophy may yet play an honourable and not unimportant part in bringing the unconscious philosophy of this country to that consciousness of itself and that self-expression which will usher in a new era of European philosophy.

* * * * *

LECTURE COURSES for the Michaelmas Term: Session 1934–35:—

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The Evening Meetings for the Michaelmas Term of the Session will be held at University College, Gower Street, W.C.1, at 8.15 p.m., on the following dates:—

Tuesday, October 16th: Presidential Address. The Rt. Hon. Sir Herbert Samuel, G.C.B., G.B.E., M.A., M.P.

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